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Compilation and synthesis of supplementary information incorporated in sixth national communications from Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol

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Note by the secretariat

Summary

This document contains a compilation and synthesis of supplementary information incorporated in the sixth national communications submitted to the secretariat by Parties included in Annex I to the Convention in accordance with Article 7, paragraph 2, of the Kyoto Protocol. It provides information on a range of issues relating to the implementation of the Kyoto Protocol, such as: national systems and registries under the Kyoto Protocol; policies and measures (PaMs) in accordance with Article 2 of the Kyoto Protocol; trends in greenhouse gas emissions; projections and evaluation of the aggregated effect of PaMs; domestic and regional legislative arrangements and enforcement and administrative procedures to meet commitments under Articles 6, 12 and 17 of the Kyoto Protocol; and information under Articles 10 and 11 of the Kyoto Protocol.

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I. Executive summary

1. This document presents the summary information provided by Parties in their sixth national communications (NC6s) to demonstrate compliance with their commitments under the Kyoto Protocol. It contains information compiled and synthesized from the NC6s of 41 Parties included in Annex I, as defined in Article 1, paragraph 7, of the Kyoto Protocol (hereinafter referred to as Parties included in Annex I).

2. This document should be read in conjunction with document FCCC/SBI/2014/INF.20 and Add.1 and 2, which compiles and synthesizes information relevant to Convention implementation from NC6s and first biennial reports (BR1s) from Annex I Parties. The focus of this document is on those elements that are supplementary under the Kyoto Protocol, including information on:

(a) National systems in accordance with Article 5, paragraph 1, of the Kyoto Protocol;

(b) National registries;

(c) Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures;

(d) Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol;

(e) PaMs in accordance with Article 2 of the Kyoto Protocol;

(f) Information under Article 10 of the Kyoto Protocol; and

(g) Information on financial resources.

3. In the chapter on emission trends, the term "total GHG emissions for the base year" refers to the total aggregate GHG emissions used for the calculation of assigned amounts for the first commitment period of the Kyoto Protocol. In the chapter on projections, owing to the pending calculation of assigned amounts for the second commitment period, a very preliminary estimate of the total GHG emissions for the base year is provided that refer to the total aggregate GHG emissions excluding land use, land-use change and forestry (LULUCF) in 1990, except for those Parties that may use a different base year in accordance with decisions 9/CP.2 and 11/CP.4.[1]

A. Greenhouse gas emission trends

4. From the base year[2] to 2012, **total aggregate GHG emissions for all Annex I Parties** taken together **decreased** from 12.7 to 10.1 thousand megatonnes of carbon dioxide

[1] Generally, the definition of base year under the Kyoto Protocol differs from the base year definition under the Convention, which is used in document FCCC/SBI/2014/INF.20/Add.1.

[2] Base year refers to 1990 for all Annex I Parties, except for Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989) and Slovenia (1986), as stipulated in decisions 9/CP.2 and 11/CP.4. Annex I Parties may choose to use 1995 as their base year for fluorinated gases for the purpose of calculating their assigned amounts pursuant to Article 3, paragraphs 7 and 8, of the Kyoto Protocol. For details on the base year, see <http://unfccc.int/ghg_data/kp_data_unfccc/base_year_data/items/4354.php>.

equivalent (Mt CO_2 eq), representing a **20.3 per cent** reduction.[3] In the same period, emissions from all sectors decreased, with industrial processes displaying the largest decrease. Between the base year and 2012, emissions of all GHGs decreased, except emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) taken together.

5. Emissions decreased sharply in the early 1990s, mainly because of the **transition to market economy of Annex I Parties with economies in transition (Annex I EIT Parties) and the subsequent economic restructuring**. This was followed by the economic recovery of those Parties and associated emission increases. The increase was, however, rather moderate as most **Annex I EIT Parties** managed to keep **emissions low**, despite **continuous economic growth**, owing to **energy efficiency improvements and technological modernization of industry**. At the same time, emissions for Annex I Parties that do not have economies in transition (Annex I non-EIT Parties) increased continuously until the **mid-2000s, when total emissions for Annex I Parties have reached a peak** and after which have since been decreasing. Some of this decrease can be attributed to the **economic crisis**, which started in 2008, but also to **PaMs implemented by Parties to achieve their commitments under the Kyoto Protocol**. Generally, the emission reductions are the result of technological improvements, behavioural changes, and economic and demographic shifts – some induced by PaMs, others not.

6. For Parties to the Kyoto Protocol with commitments inscribed in Annex B to the Kyoto Protocol (Annex B Parties), GHG emissions decreased from 12.0 thousand Mt CO_2 eq in the base year to 9.3 thousand Mt CO_2 eq in 2012, or by 22.6 per cent. These numbers suggest that the **emissions of Annex B Parties as a group are well below the Kyoto Protocol emission reduction target of at least 5 per cent** below the 1990 level in the first commitment period enshrined in Article 3, paragraph 1 of the Kyoto Protocol.

7. On the basis of information reported in the NC6s and preliminary emission data for the period 2008–2012, **all Parties expect to meet their commitments for the first commitment period of the Kyoto Protocol,** with some major group of Parties, the EU and its 15 member States (EU-15), expecting to even overachieve this commitment. Some **25 Parties** (Australia, Belgium, Bulgaria, Croatia, Czech Republic, Estonia, EU-15, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Monaco, Netherlands, Poland, Portugal, Romania, Russian Federation, Slovakia, Sweden, Ukraine and United Kingdom of Great Britain and Northern Ireland) seem to be on track to **achieving their targets** for the first commitment period of the Kyoto Protocol **through domestic emission reductions** only. **Four additional Parties** (Iceland, Italy, New Zealand and Slovenia) are also expected to meet their respective targets with domestic emission reductions and removals from **activities under Article 3, paragraphs 3 and 4,** of the Kyoto Protocol. The remaining Parties (Austria, Denmark, Japan, Liechtenstein, Luxembourg, Norway, Spain and Switzerland) expect to **use in addition Kyoto Protocol units** to achieve their targets.

B. Projections and the total effect of policies and measures

8. **Total aggregate GHG emissions** excluding LULUCF for all Annex B Parties taken together, under the 'with measures' scenario, are projected to **decrease by 2020 by 22.7**

[3] The estimates provided in this document for Iceland do not take into consideration the provisions of decision 14/CP.7 that Iceland intends to implement in meeting its commitments under Article 3, paragraph 1, of the Kyoto Protocol, because the way in which the decision will be implemented can be defined only after GHG inventory data have been reported and reviewed for the last year of the first commitment period of the Kyoto Protocol.

per cent compared with in the base year – from 7.8 to 6.0 thousand Mt CO_2 eq. and by 2.7 per cent compared with the 2010 level (6.2 thousand Mt CO_2 eq).

9. Under the 'with additional measures' scenario, from the base year to 2020, GHG emissions excluding LULUCF are projected to decrease from 7.8 to 5.8 thousand Mt CO_2 eq, or by 25.4 per cent.

10. The projection data for the 'with measures' and 'with additional measures' scenarios **suggest that the emission reduction target for Annex B Parties as a group of at least 18 per cent**, as specified in the Doha Amendment to the Kyoto Protocol contained in Annex I to decision 1/CMP.8, **may be met by domestic actions** only. It appears that several Parties expect that they can achieve their 2020 targets with currently implemented and adopted PaMs alone, namely the EU and its 28 member States, and some Parties need to put additional PaMs in place to achieve their targets. It should be noted that this is a very preliminary assessment because some factors, such as base year emissions, coverage of gases and the global warming potentials, might change in accordance with the revised "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories" (hereinafter referred to as Annex I GHG inventory reporting guidelines).

11. In the longer term, **by 2030**, GHG emissions excluding LULUCF are projected to **decrease by 19.7 per cent compared with the base year**; however, between 2010 and 2030, an increase in emissions by 1.1 per cent is projected. With additional measures, GHG emissions excluding LULUCF are projected to decrease by 22.7 per cent between the base year and 2030 and by 2.8 per cent between 2010 and 2030.

12. All Parties reported the effects of individual implemented and/or adopted PaMs by 2020. Estimates show that **implemented domestic PaMs** are likely to deliver **emission savings of approximately 1.1 thousand Mt CO_2 eq by 2020**. Additional measures could add emission savings of an additional 0.2 thousand Mt CO_2 eq in the same period.

13. The highest impact of the implemented and/or adopted PaMs is expected to occur in the energy sector (excluding transport), which accounts for 57.2 per cent of the total emission savings in 2020. The transport sector is projected to account for 12.3 per cent of the emission savings, and the remaining sectors (industrial processes, agriculture, waste and cross-cutting) for 30.5 per cent of the savings.

C. Policies and measures in accordance with Article 2 of the Kyoto Protocol

14. Parties have added some important PaMs to their portfolios for climate change mitigation compared to the PaMs reported in fifth national communications (NC5s), but **mostly they have worked at strengthening and refining their existing PaMs – implementing more stringent features, achieving wider coverage and increasing resource expenditure**. Overall, most Parties have **kept to the general strategies and portfolios of PaMs** reported as implemented or adopted in their NC5. A notable exception is Australia, which has instituted major reforms to its climate change strategy and policies. Therefore, the general mix of PaMs – economic and fiscal instruments, regulations, voluntary/negotiated agreements, framework targets, information, education and awareness programmes, research and development (R&D), and other instruments – reported in the NC6s remained broadly the same as reported in the NC5s.

15. The information reported in the NC6s suggests that **most Parties continue to view climate change as a prominent policy concern**, with all Parties having **national climate change strategies, action plans and programmes with mitigation PaMs**. Parties reported

some 1,289 implemented, adopted and planned mitigation PaMs, with highly diverse scopes and expected emission impacts. They are used at all levels of governmental jurisdiction – regional, national, state/provincial and municipal – to influence the investments, purchases and behaviours of numerous individuals and institutions involved in a myriad of activities related to energy supply, energy end-use and non-energy emissions.

16. The first commitment period of the Kyoto Protocol (2008–2012) has elapsed, and **PaMs** – along with some autonomous technology improvements, behavioural changes and economic and demographic shifts – have **contributed to the achievement of commitments by Annex B Parties** by reducing GHG emissions, or in some cases at least limiting their growth.

17. Nearly all Annex B Parties for the first commitment period of the Kyoto Protocol have agreed on quantified emission reduction targets for the second commitment period (2013–2020). To meet those commitments, Parties have **mostly strengthened and refined their existing PaMs** – to further reduce emissions, cut costs, diminish the administrative burden, etc. – as lessons are learned and market and technological conditions evolve. They have also **implemented major new PaMs** – some reported as planned in the NC5s (e.g. the European Union (EU) effort-sharing decision); some new in the NC6s (e.g. Australia's carbon pricing mechanism (CPM), which was repealed in 2014, and the EU energy efficiency directive) – and are increasingly using **framework targets**, sometimes coupled with project funding, to devolve partial responsibilities for mitigation to lower levels of government (e.g. EU member States and states/provinces).

18. Parties, in the context of job creation and economic competitiveness, are increasingly supporting the **interests of their business and commercial enterprises** though PaMs focused on **low-carbon technology innovations and investments**. Parties also continue to promote mitigation through PaMs traditionally associated with **energy efficiency goals**, but are increasingly drawing attention to the **emission reduction aspects** of those PaMs through standards and labelling.

19. **One of the major successes in PaMs, based on targets and price incentives, is manifested through the rapid growth in renewable energy production and use** in recent years. This growth has **contributed to emission reductions**, and many Parties are working towards still **higher renewable energy targets in the 2020 time frame**. In addition, the cost of renewable energy plummeted and in many cases, renewable energy is now competitive, and some of the incentives introduced at the early stage of technology development are not needed anymore. In the light of the Fukushima Daiichi nuclear power plant accident, some Parties have decided **to re-examine the political viability of** (and, in some cases, phase out) **their use of nuclear power and its impact on climate policy and targets**.

20. **Emissions trading schemes (ETSs)** continue to be the most widely used **cross-cutting instruments**, owing to the certainty that they provide in remaining within the regulated emission levels and their flexibility in terms of actions to reduce the costs. In many cases, ETSs have been enhanced in stringency and coverage (e.g. the European Union Emissions Trading System (EU ETS) third phase reforms). **ETSs and mandatory regulations** are especially important in the **electricity and heat production, transport fuel supply and demand, and industry sectors**.

21. Building on the success of **reducing emissions from the waste sector in many Parties**, owing to PaMs that tackle emissions throughout the whole waste life cycle, Parties continued to use framework targets, regulations, fiscal incentives, voluntary enterprise partnerships and resource management. To reduce emissions from **industrial processes**, Parties reported **new use of ETSs and information** and continued use of their previous regulations, reporting, voluntary sectoral commitments, fiscal incentives and research. The

policy portfolios to **reduce emissions and enhance removals from agriculture and LULUCF** have remained broadly the same since the NC5s. Although the measures tend to be part of larger policy strategies aimed at rural development, agricultural reform, environmental stewardship and biodiversity, some Parties use voluntary emission offset schemes that are primarily climate focused.

22. With regard to information relevant to the **promotion and implementation of decisions** of the **International Civil Aviation Organization (ICAO)** and the **International Maritime Organization (IMO)**, many Annex I Parties reported in their NC6s on significant progress made by ICAO on a portfolio of measures to address emissions resulting from fuel sold to international aviation, mainly through the adoption of resolution A38-18 on climate change in 2013. Parties also reported on progress made by IMO, in particular through the adoption in 2011 of a set of mandatory technical and operational measures to improve the energy efficiency of and reduce GHG emissions from international shipping, which entered into force on 1 January 2013 under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL).

23. Parties have reported in their NC6s how they strive **to implement PaMs in such a way as to minimize adverse effects**, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties. Steps taken to minimize adverse effects include minimizing energy market imperfections and/or reflecting externalities in market prices, notification of proposed PaMs under international trade conventions, and providing support for capacity-building and climate change mitigation in developing countries, including development and diffusion of advanced fossil fuel technologies and assistance with economic diversification. Several Parties indicated that before decisions to implement PaMs are taken, impact assessments are carried out that include, to the extent possible, assessing the risk of adverse effects on other countries. In addition, some Parties indicated that the implementation of the Kyoto Protocol by Annex I Parties should contribute to preventing dangerous anthropogenic interference with the climate system, thereby reducing the adverse effects of climate change in all countries, especially developing countries.

D. Domestic and regional legislative arrangements and enforcement and administrative procedures to meet commitments under the Kyoto Protocol

24. All Parties have continued **enhancing their comprehensive approaches** to **addressing climate change**, strengthening the coordination and monitoring of national efforts, and advancing in the implementation of national climate change strategies. Parties' NC6s focused on the **cross-sectoral legal, regulatory and institutional frameworks for implementing mitigation PaMs** under the Kyoto Protocol, the **legal basis for enforcement and administrative procedures**, including responsibilities for the implementation of enforcement procedures, **institutions and systems to account for emissions and assigned amounts**, and relevant **arrangements for implementing the Kyoto Protocol mechanisms**.

25. While in many Parties the **national administration is generally responsible for the policymaking process**, **regions also increasingly participate actively in the process** through consultations and have **responsibilities in policy implementation**. In addition, for some Parties, further disaggregation of responsibility to the municipal level is involved in the implementation and delivery of climate change PaMs: a few Parties have thus put climate agreements with municipalities in place.

26. Most Parties have **further promoted legislative and regulatory frameworks** for implementation of the Kyoto Protocol. Those Parties have strengthened existing cross-cutting instruments, such as ETSs or carbon taxes, or established new cross-cutting instruments, such as framework targets, which establish legally binding or indicative goals for GHG emissions, technology shares, fuel shares and efficiency, followed up with **monitoring, reporting and verification procedures to ensure compliance**.

27. With regard to arrangements and procedures that seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources, the majority of Parties have reported that their **forest is managed according to the principles of sustainable forest management**. Depending on the particular national circumstances and governance structure of the Party, **requirements for biodiversity conservation and the sustainable use of natural resources are regulated in acts, regulations, programmes and strategies** at the national or regional level. In addition, the national legislation of some Parties sets strict requirements in relation to deforestation.

28. Parties reported on the **institutional arrangements and decision-making procedures** relating to participation in the **mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol**. For some Parties, such as Austria, Denmark, Japan, Liechtenstein, Luxembourg, Norway, Spain and Switzerland, participation in the Kyoto Protocol mechanisms is essential for meeting their Kyoto Protocol targets. Several other Parties mainly participate in the clean development mechanism (CDM) and joint implementation (JI) for capacity-building and technology transfer purposes.

29. Parties have put in place **various approaches, instruments and programmes** to facilitate the **implementation of the Kyoto Protocol mechanisms** and to acquire Kyoto Protocol units, such as governmental procurement programmes and participation in the work of the facilities at multilateral, regional, national and financial institutions. Most Parties that intended to use the Kyoto Protocol mechanisms for compliance purposes have created dedicated funds or purchasing programmes and set principles and priorities for the management of those funds. Governments and companies also contribute to dedicated international carbon funds to purchase project-based GHG emission reductions in developing countries and countries with economies in transition.

30. Parties that plan to use the **Kyoto Protocol mechanisms for compliance with their emission reduction targets** reported in their NC6s, or provided an indication therein, **on how that use is supplemental to domestic actions** and how domestic actions thus constitute a significant element of the effort made to meet their Kyoto Protocol targets. Information reported in the NC6s and the latest GHG inventory information indicate that only nine Parties seem to actually need to use Kyoto Protocol mechanisms for **compliance with their Kyoto Protocol targets**.

31. Parties **defined supplementarity criteria, either in quantitative or in qualitative terms**, using a variety of methods. There are no agreed approaches and reporting guidelines on how to set a quantitative threshold. Although the lack of reporting guidelines does not facilitate consistency in the reporting on supplementarity across Parties, preliminary data and intentions to use the Kyoto Protocol mechanism reported in the NC6s broadly suggest that **Parties using the mechanisms to meet their Kyoto Protocol targets are striving to adhere to the supplementarity criteria**.

E. National systems and registries under the Kyoto Protocol

32. All Annex I Parties reported on how their **"national systems" for GHG inventory preparation and management** are performing the required general and specific functions.

Understanding that a robust national system provides a foundation for a high-quality GHG inventory, many Parties have strengthened their national systems. **The most important evidence of the strengthening of national systems in most Parties continues to be the demonstration of major improvements in the quality of the GHG inventories in the NC6s compared with in the NC5s.**

33. **National registries** are crucial for assessing the **compliance of Parties with their Kyoto Protocol targets** as they record the holdings and transactions of Kyoto Protocol units and maintain information on those units in accounts with a predefined structure. All Parties reported on the arrangements for their national registries in their NC6s. Parties further improved registry operations, and changes were made to further institutionalize the national registries. The main change is the centralization of the EU ETS operations into a single EU registry operated by the European Commission called the Consolidated System of European Union Registries (CSEUR).

F. Finance, technology and capacity building, including information under Articles 10 and 11 of the Kyoto Protocol

34. Information provided in the NC6s suggests that Parties included in Annex II to the Convention (Annex II Parties) continue to make predominant use of **multilateral and bilateral channels in the provision of financial resources**, with an increase in funding through bilateral channels. Notwithstanding the various reporting issues identified, a few trends are identifiable, such as, for example, the **increased funding directed towards adaptation, energy, forestry (including REDD-plus[3]), capacity-building and cross-cutting activities**, as well as through funds other than the Convention funds. In their reports, Annex II Parties also provided information on their **continued provision of funding to the Global Environment Facility**, although the sum of the amounts reported by Annex II Parties in NC6s is lower than that reported in NC5s. However, the sum of Annex II Parties' reported contributions to the **Least Developed Countries Fund** and the **Special Climate Change Fund** in the NC6s is higher than the sum of reported amounts in NC5s. In addition, Parties also started to report on funds provided to the **Green Climate Fund**.

35. In their reports, some developed country Parties provided concrete information on their voluntary contributions to the **Adaptation Fund** since the NC5s, including total amounts of contributions within the reporting period (USD 138.97 million), as well as specific examples of projects supported. Some Annex II Parties also provided information on contributions to multilateral carbon funds.

36. Annex II Parties engaged bilaterally with developed and developing countries in **climate technology transfer activities**. The majority of the activities were related to the **mitigation of GHGs in the energy sector**, particularly in relation to renewable energy and energy efficiency technologies. However, an increasing number of technology activities have also focused on supporting **climate change adaptation**. Since the NC5s, a larger percentage of reported projects have been implemented in the Latin America and Caribbean region and on a global scale.

37. Most Parties reported a **combination of public and private funding** of technology transfer activities. Factors that contributed to the **successful implementation** of climate technology transfer activities include: aligning the activities with the national policies, plans and strategies of the recipient Party; undertaking an integral approach to technology transfer (which includes capacity-building and awareness components); undertaking a

[3] Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

market analysis; utilizing innovative financing; and developing a strong and capable network. Development of **partnerships with and between relevant stakeholders** was reported to be an **effective channel** for implementing technology activities and was also seen to facilitate local ownership of the activity.

38. Parties have extensively reported on **support that has been provided bilaterally and multilaterally to strengthen institutional, systemic and individual capacities** to plan and undertake mitigation actions, promote the CDM and facilitate access to carbon finance. Initiatives undertaken to build the capacity for low-carbon development paths include developing national GHG inventory systems and measurement, reporting and verification (MRV) procedures, strengthening national and local institutional and technical capacity and organizing training activities. The transfer of **know-how for environmentally friendly technologies in the context of the CDM** in countries in Africa, in the least developed countries (LDCs) and in small island developing States (SIDS) has become a **priority for some Annex II Parties**.

39. Parties have **continued to strengthen their engagement in international and regional climate change research and observation activities**, such as by participating in, and contributing and providing support to, regional and international research programmes and organizations that are active in climate change research and global observing systems and networks. Furthermore, many such international cooperative efforts, as well as other bilateral, multilateral or regional activities, provide support for building and strengthening capacity and facilitating the engagement of developing countries in such international research and observational activities.

40. Many Parties have **cooperated** in the areas of **education, training and public awareness**, including through the creation of international networks through the United Nations University Regional Centres of Expertise on Education for Sustainable Development, which are hosted by higher-education institutions and involve local authorities and communities, non-governmental organizations (NGOs) and the private sector. Some Parties have collaborated with international business networks that work to reduce emissions from the business sector and raise awareness of climate issues by showing that ambitious climate strategies afford business advantages and greater profitability.

II. Mandate and approach

41. Article 7, paragraph 2, of the Kyoto Protocol requires each Annex I Party to incorporate in its national communication, submitted under Article 12 of the Convention, the supplementary information necessary to demonstrate compliance with its commitments under the Kyoto Protocol (hereinafter referred to as the supplementary information), in accordance with part II of the "Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol", "Reporting of supplementary information under Article 7, paragraph 2" (decision 15/CMP.1) (hereinafter referred to as the reporting guidelines).

42. Such information has to be submitted within the time frames for the obligations established by the Kyoto Protocol and by the relevant decisions of the Conference of the Parties (COP) and the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP). The COP, by decision 9/CP.16, paragraph 5, requested each Annex I Party to submit to the secretariat, in accordance with Article 12, paragraphs 1 and 2, of the Convention, an NC6 by 1 January 2014. The CMP, by decision 10/CMP.6, paragraph 5, requested Annex I Parties that are also Parties to the Kyoto Protocol to include, in their NC6s, the necessary supplementary information required by the reporting guidelines.

43. The CMP, by decision 9/CMP.9, paragraph 1, requested the secretariat to prepare the compilation and synthesis of supplementary information incorporated in the NC6s for consideration at CMP 10.

44. This document contains information compiled and synthesized from the NC6s of the 41 Annex I Parties that had submitted their NC6s by the time of the preparation of this document (Australia, Austria, Belarus, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, EU, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine and United Kingdom) and from the NC5 of Turkey.

45. Although Turkey and Kazakhstan are Parties included in Annex I they do not have commitments inscribed in Annex B to the Kyoto Protocol for the first commitment period. Because the amendment to the Kyoto Protocol with an emission reduction target for Belarus for the first commitment period (decision 10/CMP.2) has not yet entered into force, information on Belarus as an Annex B Party for the first commitment period is not provided in this document.

46. Turkey has not submitted information under Article 7, paragraph 2, of the Kyoto Protocol and is therefore not covered in this document, except for in the sections on emission trends. Belarus and Kazakhstan, which have commitments inscribed in Annex B to the Kyoto Protocol for the second commitment period, submitted in their NC6s some of the information required under Article 7, paragraph 2, of the Kyoto Protocol; that information and information on emission trends and projections is included in this document. Cyprus and Malta became Annex I Parties in 2013 and 2010, respectively, without being Annex B Parties for the first commitment period of the Kyoto Protocol. However, as they are Annex B Parties for the second commitment period, relevant reported information is included in this document.

47. To avoid an overlap between the compilation and synthesis of NC6s, which covers all Annex I Parties, and this document, the latter provides a brief summary of and makes reference to the information contained in the former report on emission trends, projections, PaMs, financial resources, transfer of technology and capacity-building, and research and systematic observation. The chapter on emission trends provides information on the total GHG emissions of Parties included in Annex I (excluding Canada and United States of America, but including Belarus, Kazakhstan and Turkey). This document also provides an overview of the progress of individual Parties towards achieving their Kyoto Protocol targets for the first commitment period, including the contribution of domestic PaMs, accounting for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol and accounting for Kyoto Protocol units.

48. This document presents the summary information provided in the NC6s in accordance with the requirements of the reporting guidelines, namely information on: national systems in accordance with Article 5, paragraph 1, of the Kyoto Protocol; national registries; domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures; supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol; PaMs in accordance with Article 2 of the Kyoto Protocol; information under Article 10 of the Kyoto Protocol; and information on financial resources. In this document, unless specified otherwise, "Parties" refer to Annex I Parties under the Convention that are also Parties to the Kyoto Protocol.

III. Overview

49. **All Parties provided the supplementary information** in their NC6s. The supplementary information **is placed in different sections of the NC6** depending on the substantive requirements for such information. For example, information on PaMs under Article 2 of the Kyoto Protocol and domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures is reported in the same section of the NC6 as where Parties reported information on PaMs and institutional arrangements under the Convention; and information under Articles 10 and 11 of the Kyoto Protocol can be found in the sections on financial resources and technology cooperation, climate change vulnerability and adaptation, research and systematic observation, and education, training and public awareness. In addition, several Parties made reference to the national inventory reports of their 2013 annual submissions with regard to further information on their national systems and registries.

50. All reporting Parties provided **detailed information on domestic PaMs** to mitigate GHG emissions under Article 2 of the Kyoto Protocol. In addition, Parties that intend to use the Kyoto Protocol mechanisms to meet their Kyoto Protocol targets provided information on how the use of those mechanisms is supplemental to domestic actions and how their domestic actions thus constitute a significant element of the efforts made to meet their targets. Most Parties reported some information on steps taken to limit emissions from aviation and marine bunker fuels and on ways to minimize the adverse effects of the implementation of PaMs under Article 2 of the Kyoto Protocol, and they included that information in the section of their NC6 on PaMs.

51. A description of **domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures in a coherent way** was provided by all Parties, mostly in the section of their NC6 on PaMs. Such information includes the elaboration of inter- and intragovernmental institutional arrangements, legislative frameworks and rules and procedures for the use of the Kyoto Protocol mechanisms.

52. Supplementary information on **technology transfer, capacity-building and provision of financial resources** was provided by all reporting Annex II Parties in the sections of the NC6 on financial resources and technology transfer and on education, training and public awareness. Many Annex I Parties (Cyprus, Czech Republic, Hungary, Lithuania, Malta, Monaco, Poland, Romania, Slovakia and Slovenia), which are not Annex II Parties and thus have no obligation to report such information in their national communications, still provided some information on their development assistance in the context of climate change.

53. With regard to cooperation in the area of scientific and technical **research and systematic observation**, as referred to in Article 10(d) of the Kyoto Protocol, Parties generally reported related activities in the section of their NC6 on research and systematic observation under the Convention.

IV. Greenhouse gas emission trends

A. Overview

54. This chapter discusses GHG emission data for Annex I Parties that are also Parties to the Kyoto Protocol, which are based on information from the 2014 national GHG inventory submissions under the Kyoto Protocol received as at 27 May 2014. Information

on total aggregate GHG emissions excluding emissions and removals from LULUCF, emissions by gas and emissions by sector, as well as emission data for individual Parties, are presented herein.

55. This chapter also presents information on the emission trends of the 37 Annex B Parties with commitments for the first commitment period of the Kyoto Protocol as a group: Australia, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, EU-15, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine and United Kingdom. The emissions of Canada, which withdrew from the Kyoto Protocol effectively on 15 December 2012, are not included in the totals.

56. **Total aggregate GHG emissions for all Annex I Parties taken together decreased by 20.3 per cent from the base year to 2012.** Between the **base year and 2000**, emissions **dropped by 20.1 per cent, owing mainly to the transition to market economy of Annex I EIT Parties** and the subsequent economic restructuring in the 1990s. A small increase in emissions from 2000 to 2012 (0.2 per cent) is observed, reflecting an increase in emissions of EIT Parties, driven by their economic growth, and a decrease in emissions of Annex I non-EIT Parties.

57. GHG emissions of Annex B Parties decreased from 12,012 Mt CO_2 eq in the base year to 9,300 Mt CO_2 eq in 2012 (22.6 per cent). Emissions from this group of Parties decreased by 20.2 per cent between the base year and 2000, and by 3.0 per cent from 2000 to 2012.

B. Total aggregate greenhouse gas emissions

58. From the base year to 2012, total aggregate GHG emissions for all Parties included in Annex I taken together decreased from 12,706 to 10,125 Mt CO_2 eq, or by 20.3 per cent. By 2000, emissions had decreased by 20.1 per cent compared with in the base year. This is due, to a large extent, to the steep decline in emissions of Annex I EIT Parties (by 40.8 per cent) in the beginning of 1990s. From 2000 to 2012, total aggregate emissions for all Annex I Parties slightly decreased (by 0.2 per cent), which reflects the slight increase in emissions of Annex I EIT Parties being offset by the decrease in emissions of Annex I non-EIT Parties. There was also a drop in emissions in 2009 reflecting the economic crisis that started in 2008.

59. The emission reductions are the result of technological improvements, behavioural changes and economic and demographic shifts – some induced by PaMs, others not. As was the case in previous national communications (and reported in the fifth compilation and synthesis report[5]), the NC6s contain insufficient information to distinguish between the emission reductions resulting from PaMs and those that happened for other reasons.

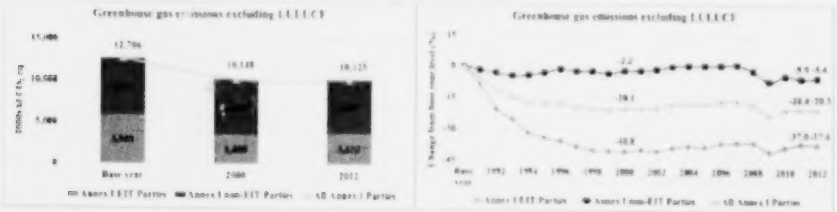
60. Total aggregate GHG emissions for Annex I EIT Parties sharply decreased from the base year to 2012 (by 37.4 per cent), from 5,909 to 3,698 Mt CO_2 eq. The decrease in emissions by 40.8 per cent occurred between the base year and 2000, mainly because of the transition to market economy in the 1990s in those Parties, which transitioned from centrally planned to market economies. This was followed by economic recovery and an associated emission increase by 5.7 per cent from 2000 to 2012. EIT Parties reported fewer PaMs than the rest of the Annex I Parties. Most of their emission reductions appear to have been the result of the economic policies and market forces that shaped the economic restructuring in the early to mid-1990s and not from explicit climate change PaMs.

[5] FCCC/SBI/2011/INF.2.

61. GHG emissions for Annex I non-EIT Parties decreased from 6,797 to 6,427 Mt CO_2 eq (by 5.4 per cent) from the base year to 2012. From the base year to 2000, emissions decreased by 2.2 per cent, and they decreased even more over the period 2000–2012 (by 3.3 per cent). Despite the more moderate decrease in emissions, non-EIT Parties have implemented many more PaMs.

62. Figure 1 shows the trends in total aggregate GHG emissions from the base year to 2012 for all Annex I Parties taken together, for Annex I EIT Parties and for Annex I non-EIT Parties. The emission trends for Annex B Parties only are illustrated in figure 2 and described in box 1.

Figure 1
Greenhouse gas emissions of Annex I Parties, base year, 2000 and 2012



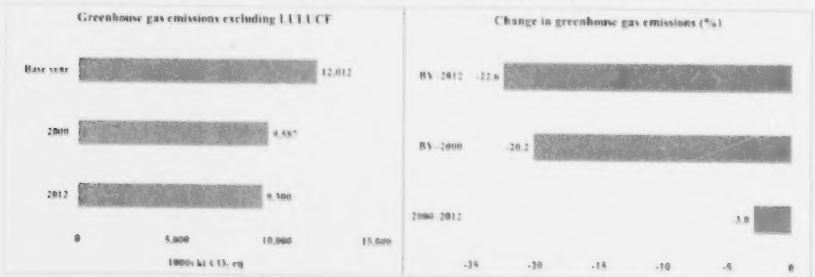
Note: The base year emissions include net emissions from deforestation for five Parties (Australia, Ireland, Netherlands, Portugal and United Kingdom).

Abbreviations: EIT Parties = Parties with economies in transition, LULUCF = land use, land-use change and forestry, non-EIT Parties = Parties that do not have economies in transition.

Box 1
Emission trends for Annex B Parties

For Annex B Parties, GHG emissions decreased by 22.6 per cent from the base year to 2012, from 12,012 to 9,300 Mt CO2 eq. Between the base year and 2000, emissions decreased by 20.2 per cent, and over the period 2000–2012 emissions further decreased by 3.0 per cent. Such reductions bring the GHG emissions of Annex B Parties as a group well below their target of reducing emissions by at least 5 per cent below 1990 in the first commitment period, as stipulated in Article 3, paragraph 1, of the Kyoto Protocol.

Figure 2
Greenhouse gas emissions of Annex B Parties, base year, 2000 and 2012



Abbreviations: BY = base year, LULUCF = land use, land-use change and forestry.

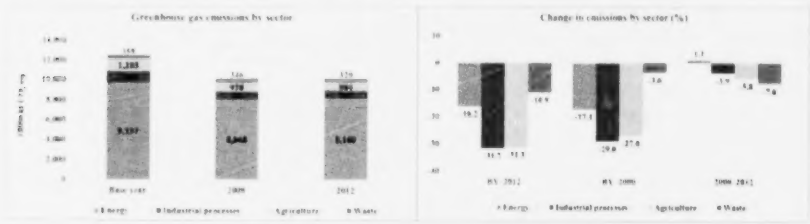
C. Greenhouse gas emissions by sector

63. From the base year to 2012, the emissions of all Annex I Parties taken together from all sectors decreased, with the largest decrease occurring in the industrial processes sector (by 31.7 per cent), followed by agriculture, energy and waste. A similar trend can be observed in the emissions in 2000 compared with in the base year, with emissions from industrial processes again showing the largest decrease (by 29.0 per cent). Over the period 2000–2012, emissions dropped in all sectors, except energy (which had an emission increase of 1.1 per cent).

64. For Annex B Parties, there was a decline in emissions from all sectors in all three time periods. From the base year to 2012 and from the base year to 2000, the industrial processes sector had the largest decrease in emissions (by 37.1 per cent and 30.1 per cent, respectively). However, from 2000 to 2012, the largest decrease in emissions occurred in the waste sector (by 11.2 per cent).

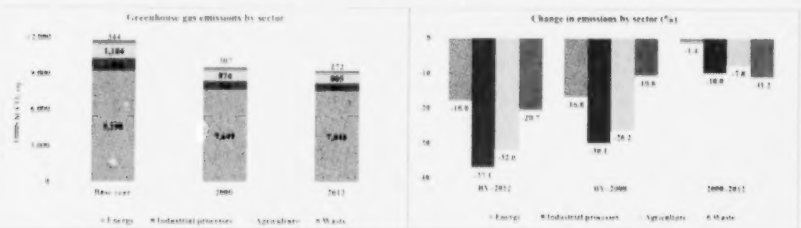
65. The trends in emissions by sector are presented in figure 3 (for Annex I Parties) and figure 4 (for Annex B Parties).

Figure 3
Greenhouse gas emissions of Annex I Parties, by sector



Abbreviation: BY = base year.

Figure 4
Greenhouse gas emissions of Annex B Parties, by sector



Abbreviation: BY = base year.

D. Greenhouse gas emissions by gas

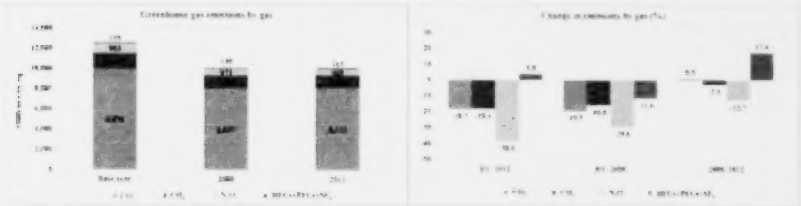
66. Throughout the entire period from the base year to 2012, CO_2[6] has been the predominant GHG, contributing about 79.5 per cent of the total emissions of all Annex I Parties taken together. Methane (CH_4) contributed about 12.5 per cent of the total emissions

[6] The total CO_2 emissions for the base year include net emissions from deforestation of the following Parties: Australia, Ireland, Netherlands, Portugal and United Kingdom.

over the same period, and the share of nitrous oxide (N_2O) was about 6.5 per cent. The share of HFCs, PFCs and SF_6 taken together amounted to about 1.5 per cent.

67. Over the same period, emissions of all GHGs decreased, except HFCs, PFCs and SF_6 taken together, which increased by 3.8 per cent (see figure 5). From the base year to 2000, emissions of all GHGs decreased, with N_2O emissions showing the largest decrease (by 29.6 per cent). Over the period 2000–2012, CH_4 and N_2O emissions continued their decreases, while CO_2 emissions increased slightly (by 0.9 per cent). Emissions of HFCs, PFCs and SF_6 taken together increased by 17.4 per cent, owing mainly to HFCs being used as substitutes for some gases controlled by the Montreal Protocol resulting in a 54.5 per cent increase in HFC emissions.

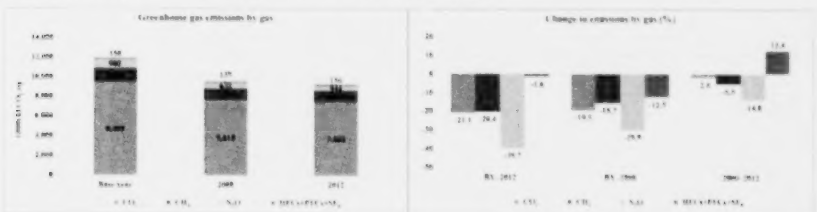
Figure 5
Greenhouse gas emissions of Annex I Parties, by gas



Abbreviation: BY = base year.

68. For Annex B Parties, emissions of CO_2, CH_4 and N_2O decreased in all three periods under discussion – base year to 2012, base year to 2000, and 2000 to 2012 – with N_2O emissions showing the largest decrease in all three time periods (see figure 6). Emissions of HFCs, PFCs and SF_6 taken together decreased slightly from the base year to 2012, and substantively from the base year to 2000 (by 12.5 per cent). On the other hand, emissions of those gases had increased by 12.4 per cent in 2012 compared with in 2000.

Figure 6
Greenhouse gas emissions of Annex B Parties, by gas



Abbreviation: BY = base year.

E. Emission data for individual Annex I Parties

69. The changes in the total aggregate GHG emissions from the base year to 2012 varied considerably among Parties. Latvia had the largest decrease in emissions (by 57.6 per cent), followed by Romania, Ukraine, Lithuania and Estonia, whose emissions dropped by at least 55 per cent. On the other hand, Turkey experienced the highest increase in emissions (by 133.4 per cent), followed by Malta and Cyprus, although to a much lesser degree (by slightly above 50 per cent). Total emissions decreased in 30 Parties, comprising all 14 EIT Parties and 16 non-EIT Parties (including the EU), and increased in 12 Parties.

70. From the base year to 2000, the maximum decrease in emissions was by 61.4 per cent (Latvia) and the maximum increase was by 58.2 per cent (Turkey). During that period, emissions decreased in 26 Parties (all EIT Parties and 12 non-EIT Parties) and increased in 16 Parties.

71. Between 2000 and 2012, emissions decreased in 25 Parties, including 19 non-EIT Parties and 6 EIT Parties, while emissions increased in 17 Parties. Denmark had the largest decrease in emissions (by 24.5 per cent), followed by Monaco and Belgium; while Kazakhstan had the highest increase in emissions (by 64.9 per cent), followed by Turkey.

72. Table 1 shows the total aggregate emissions of each Annex I Party in the base year, 2000, 2010 and 2012, as well as the percentage change in their emissions from the base year to 2012.

Table 1

Total aggregate anthropogenic greenhouse gas emissions excluding emissions/removals from land use, land-use change and forestry for each Annex I Party

	kt CO_2 eq				
Party	*Base year*	*2000*	*2010*	*2012*	*Change from base year to 2012 (%)*
Australia	547 700	489 813	540 211	543 648	–0.7
Austria	79 050	80 277	84 808	80 059	1.3
Belarus*	139 151	79 165	89 426	89 283	–35.8
Belgium	145 729	145 857	130 611	116 520	–20.0
Bulgaria*	132 619	59 471	60 272	61 046	–54.0
Croatia*	31 322	26 339	28 806	26 385	–15.8
Cyprus	6 088	8 904	9 989	9 259	52.1
Czech Republic*	194 248	146 330	137 008	131 466	–32.3
Denmark	69 978	69 245	62 113	52 248	–25.3
Estonia*	42 622	17 157	19 892	19 188	–55.0
European Union (15)*	4 265 518	4 156 404	3 803 200	3 619 471	–15.1
Finland	71 004	69 188	74 397	60 966	–14.1
France	563 925	560 526	516 447	490 125	–13.1
Germany	1 232 430	1 040 367	946 388	939 083	–23.8
Greece	106 987	126 579	117 878	110 985	3.7
Hungary*	115 397	76 504	67 638	61 981	–46.3
Iceland	3 368	3 903	4 646	4 468	32.7
Ireland	55 608	68 216	61 895	58 531	5.3
Italy	516 851	551 237	499 359	460 083	–11.0
Japan	1 261 331	1 340 523	1 256 095	1 343 118	6.5
Kazakhstan	357 602	171 982	286 103	283 550	–20.7
Latvia*	25 909	9 994	11 987	10 978	–57.6
Liechtenstein	229	251	230	225	–1.8
Lithuania*	49 414	19 632	21 119	21 622	–56.2
Luxembourg	13 167	9 762	12 250	11 839	–10.1
Malta	1 992	2 551	2 994	3 140	57.7

	kt CO_2 eq				
Party	*Base year*	*2000*	*2010*	*2012*	*Change from base year to 2012 (%)*
Monaco	108	122	92	93	–13.2
Netherlands	213 034	213 023	209 286	191 669	–10.0
New Zealand	61 913	70 899	73 491	76 048	22.8
Norway	49 619	54 058	54 347	52 733	6.3
Poland*	563 443	396 104	407 475	399 268	–29.1
Portugal	60 148	84 100	70 634	68 752	14.3
Romania*	278 225	134 074	115 799	118 764	–57.3
Russian Federation*	3 323 419	2 053 321	2 221 342	2 295 045	–30.9
Slovakia*	72 051	48 947	45 382	42 710	–40.7
Slovenia*	20 354	18 953	19 411	18 911	–7.1
Spain	289 773	380 004	347 181	340 809	17.6
Sweden	72 152	68 563	65 072	57 604	–20.2
Switzerland	52 791	51 775	54 095	51 449	–2.5
Turkey**	188 434	298 091	403 495	439 874	133.4
Ukraine*	920 837	412 496	385 601	401 019	–56.5
United Kingdom	779 904	693 693	609 147	584 304	–25.1
Number of Parties showing a decrease in emissions by more than 1 per cent					29
Number of Parties showing a change in emissions within 1 per cent					1
Number of Parties showing an increase in emissions by more than 1 per cent					12

* Parties undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

[a] The amendment to the Kyoto Protocol to include an emission reduction target for Belarus in Annex B (decision 10/CMP.2) has not yet entered into force.

[b] Data for the European Union include the group of its 15 member States that agreed to fulfil their commitments under Article 3 of the Kyoto Protocol jointly in accordance with Article 4, paragraph 1, of the Kyoto Protocol.

F. Emission data for individual Annex B Parties

73. There is considerable variation in the changes in the total aggregate GHG emissions of individual Annex B Parties. From the base year to 2012, Latvia had the largest decrease in emissions (by 57.6 per cent) and Iceland had the largest increase (by 32.7 per cent). Between the base year and 2000, Latvia again had the largest decrease (by 61.4 per cent), while the highest increase in emissions occurred in Portugal (by 39.8 per cent). Over the period 2000–2012, Denmark had the largest decrease in emissions (by 24.5 per cent), while Luxembourg had the largest increase (by 21.3 per cent). The changes in the emission levels in 2012 compared with in the base year are presented in figure 7. A discussion of the achievement of the targets in the first commitment period of the Kyoto Protocol is contained in box 2.

Box 2

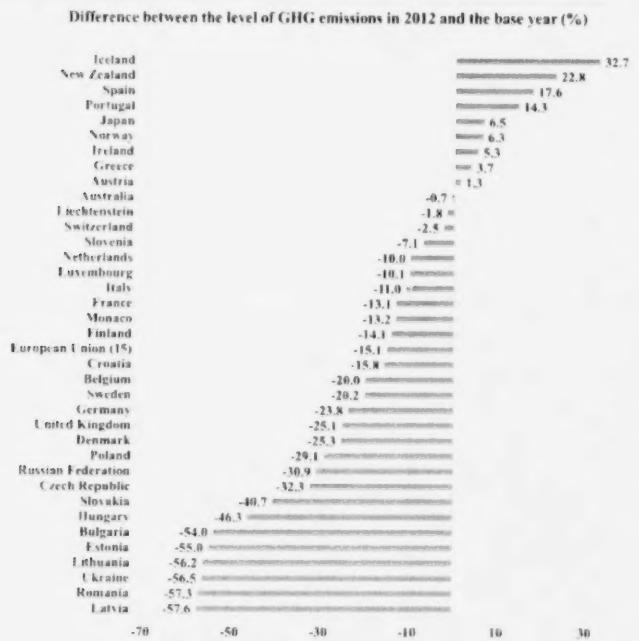
Achievement of the targets in the first commitment period of the Kyoto Protocol

Figure 8 shows a comparison between the aggregate emissions in the first commitment period of the Kyoto Protocol (2008–2012) and the Kyoto Protocol targets of each Annex B Party. The emission levels presented take into account the effect of domestic actions only and do not include removal units issued on the basis of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, nor the planned use of emission credits from market-based mechanisms. On the basis of the preliminary data, which are still subject to annual review under Article 8 of the Kyoto Protocol, 25 Parties are expected to achieve their emission reduction targets by means of domestic actions only.

74. The annual average emissions over the period 2008–2012, as well as the effects of the expected use of LULUCF activities and Kyoto Protocol mechanisms, are presented in table 2. The net quantity of the effect of the expected use of LULUCF activities by Annex B Parties amounts to 207 Mt CO_2 eq as an annual average over the period 2008–2012. This figure includes net removals from LULUCF activities of 231 Mt CO_2 eq and net emissions of 24 Mt CO_2 eq. The quantity of the effect of the expected use of Kyoto Protocol units by 11 Parties that reported such information amounts to 88 Mt CO_2 eq annually over the same period. Data reported by Annex B Parties suggest overachievement of the Kyoto Protocol targets by most of these Parties with the expected use of LULUCF activities and the Kyoto Protocol mechanisms.

Figure 7

Change in the total aggregate emissions of individual Annex B Parties in 2012 compared with in the base year



Abbreviation: GHG = greenhouse gas.

Figure 8

Difference between the emission levels in the first commitment period of the Kyoto Protocol and the Kyoto Protocol targets of individual Annex B Parties

Note: A negative value indicates overachievement of the Kyoto Protocol target and a positive value indicates a gap between the aggregate level of emissions in the period 2008–2012 and the Kyoto Protocol target.

Abbreviation: GHG = greenhouse gas.

Table 2

Annual average greenhouse gas emissions excluding emissions/removals from land use, land-use change and forestry, and the contribution of land use, land-use change and forestry activities and the Kyoto Protocol mechanisms for individual Annex B Parties in meeting their targets for the first commitment period of the Kyoto Protocol

	Emissions (kt CO_2 eq)			*Contribution of LULUCF activities and Kyoto Protocol mechanisms (kt CO_2 eq)*				
Party	*Base year (KP)[a]*	*Average emissions 2008–2012*	*Change from base year (%)*	*Expected use of LULUCF activities*	*Expected use of KP mechanisms*	*Emissions with use of LULUCF activities and KP mechanisms*	*Change from base year (%)*	*KP target (%)*
Australia	547 700	542 231	–1.0	23 125	–	565 356	–1.0	8.0
Austria	79 050	82 932	4.9	–1 357	14 200	67 374	–14.8	–13.0
Belgium	145 729	125 262	–14.0	216	5 900	119 578	–18.1	–7.5
Bulgaria	132 619	62 376	–53.0	–729	–	61 647	–53.5	–8.0
Croatia	31 322	28 875	–7.8	–972	–	27 903	–10.9	–5.0
Czech Republic	194 248	136 028	–30.0	–1 317	–	134 711	–30.6	–8.0
Denmark	69 978	59 590	–14.8	–1 722	2 200	55 668	–20.4	–21.0
Estonia	42 622	19 060	–55.3	479	–	19 539	–55.3	–8.0
European Union (15)	4 265 518	3 760 242	–11.8	–22 239	80 700	3 657 303	–14.3	–8.0
Finland	71 004	67 671	–4.7	–587	–	67 084	–5.5	0.0
France	563 925	507 736	–10.0	–3 227	–	504 510	–10.5	0.0
Germany	1 232 430	941 315	–23.6	–7 946	–	933 369	–24.3	–21.0
Greece	106 987	119 692	11.9	–411	–	119 281	11.5	25.0
Hungary	115 397	67 191	–41.8	–2 191	–	65 000	–43.7	–6.0
Iceland[b]	3 368	4 671	38.7	–308	–	4 363	29.5	10.0
Ireland	55 608	61 702	11.0	–3 258	–	58 444	5.1	13.0
Italy[c]	516 851	495 355	–4.2	–15 055	–	480 300	–7.1	–6.5
Japan[d]	1 261 331	1 278 461	1.4	–48 713	74 500	1 155 248	–8.4	–6.0
Latvia	25 909	11 290	–56.4	–1 247	–	10 044	–61.2	–8.0
Liechtenstein	229	235	2.5	0	50	185	–19.3	–8.0
Lithuania	49 414	21 957	–55.6	–1 143	–	20 814	–57.9	–8.0
Luxembourg	13 167	12 017	–8.7	–71	3 000	8 947	–32.1	–28.0
Monaco	108	94	–12.5	0	–	94	–12.5	–8.0
Netherlands	213 034	199 424	–6.4	414	6 000	193 837	–9.2	–6.0

	Emissions (kt CO_2 eq)			*Contribution of LULUCF activities and Kyoto Protocol mechanisms (kt CO_2 eq)*				
Party	*Base year (KP)*[a]	*Average emissions 2008–2012*	*Change from base year (%)*	*Expected use of LULUCF activities*	*Expected use of KP mechanisms*	*Emissions with use of LULUCF activities and KP mechanisms*	*Change from base year (%)*	*KP target (%)*
New Zealand	61 913	74 560	20.4	–14 311	–	60 249	–2.7	0.0
Norway	49 619	53 322	7.5	365	4 200	49 486	–1.0	1.0
Poland	563 443	401 253	–28.8	–5 215	–	396 038	–29.7	–6.0
Portugal	60 148	72 318	20.2	–10 069	1 600[c]	60 648	0.8	27.0
Romania	278 225	123 161	–55.7	–3 644	–	119 517	–57.0	–8.0
Russian Federation	3 323 419	2 235 371	–32.7	–121 000	–	2 114 371	–36.4	0.0
Slovakia	72 051	45 296	–37.1	–278	–	45 018	–37.5	–8.0
Slovenia	20 354	19 708	–3.2	–1 320	–	18 388	–9.7	–8.0
Spain	289 773	358 396	23.7	–10 556	31 800	316 040	9.1	15.0
Sweden	72 152	61 108	–15.3	–130	–	60 978	–15.5	4.0
Switzerland	52 791	52 307	–0.9	–1 619	3 100	47 588	–9.9	–8.0
Ukraine	920 837	398 296	–56.7	–4 570	–	393 726	–57.2	0.0
United Kingdom	779 904	599 967	–23.1	–2 842	–	597 125	–23.4	–12.5

Abbreviations: KP = Kyoto Protocol, LULUCF = land use, land-use change and forestry

[a] Total greenhouse gas (GHG) emissions for the base year refers to the total GHG emissions used for the calculation of the assigned amount pursuant to Article 3, paragraphs 7 and 8, of the Kyoto Protocol.

[b] Average emissions 2008–2012 also include emissions fulfilling the criteria set forth in decision 14/CP.7, which amount to approximately 1,200 kt annually.

[c] During the in-depth review of the sixth national communication of Italy (as reported in document FCCC/IDR.6/ITA), Italy communicated that it would need an additional 3,400 kt CO_2 eq annually from the use of the Kyoto Protocol mechanisms to fulfil its target under the first commitment period.

[d] Information was provided during the in-depth review of the NC6 of Japan (as reported in document FCCC/IDR.6/JPN).

[e] This number refers to the volume of sufficient carbon credits in the Portuguese Carbon Fund to cover the uncertainty associated with the accounting of LULUCF activities.

V. Projections and total effect of policies and measures

A. Overview

75. This chapter presents GHG emission projections, which are based on information reported in the NC6s and BR1s, where more updated information is available. According to the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications", Parties are required at a minimum to report projections under the 'with measures' scenario, but may also report projections under the 'with additional measures' and 'without measures' scenarios. The 'with measures' scenario takes into account the effects of PaMs that have either been implemented or adopted, whereas the 'with additional measures' scenario includes the effects of PaMs planned at the time that the projections were prepared. The 'without measures' scenario does not take into account PaMs that are either implemented, adopted or planned after a year chosen as the starting point for the projections.

76. As the information on projections provided in the NC6s and BR1s is for 2020 and 2030, this document covers data relating to the 38 Annex B Parties for the second commitment period, as specified in the Doha Amendment to the Kyoto Protocol contained in annex I to decision 1/CMP.8: Australia, Austria, Belarus, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, EU, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine and United Kingdom.

77. Information on GHG emission projections for all Annex I Parties, including those that are not Parties to the Kyoto Protocol, is contained in document FCCC/SBI/2014/INF.20/Add.1. To avoid repetition, this document contains those GHG data that relate to Annex B Parties with a commitment for the second commitment period of the Kyoto Protocol, such as projections of total aggregate GHG emissions, the total effect of implemented and adopted PaMs, sectoral projections and emission trends for individual Annex B Parties. The projections of GHG emissions are presented excluding LULUCF, because, in accordance with Article 3, paragraphs 3 and 4, of the Kyoto Protocol, emissions and removals from LULUCF are treated differently from emissions from the other sectors and are not included in the totals.

78. In reporting their GHG emission projections, most Parties also reported the methods and approaches used and assumptions made in preparing the projections. The methods and approaches used, as well as the assumptions made with regard to key parameters that are the main drivers of GHG emissions for most of the Parties (average growth in gross domestic product, average population growth and the assumed price of oil on the international market), are summarized in document FCCC/SBI/2014/INF.20/Add.1.

79. **Total aggregate GHG emissions excluding LULUCF for all Annex B Parties taken together are projected to decrease** from 7,757 Mt CO_2 eq in the base year to 5,998 Mt CO_2 eq in 2020 (**22.7 per cent**), but increase to 6,231 Mt CO_2 eq in 2030 (reflecting a **19.7 per cent decrease between the base year and 2030**).

80. Pending the submission of the reports to facilitate the calculation of the assigned amount pursuant to Article 3, paragraphs 7 bis, 8 and 8 bis, of the Kyoto Protocol for the second commitment period, the base year used in this chapter is 1990 for all Parties, except for those Parties that may use a different base year in accordance with decisions 9/CP.2 and

11/CP.4: Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989) and Slovenia (1986).

B. Greenhouse gas projections

1. Projections under the 'with measures' and 'with additional measures' scenarios

Projections under the 'with measures' scenario

81. All 38 Annex B Parties reported projections data under the 'with measures' scenario for 2020; however, five of those Parties (Belarus, Belgium, Bulgaria, Cyprus and France) did not provide data for 2030. In order to calculate comparable total projected GHG emissions for both years, emissions reported for 2020 were assumed to remain at the same level in 2030.

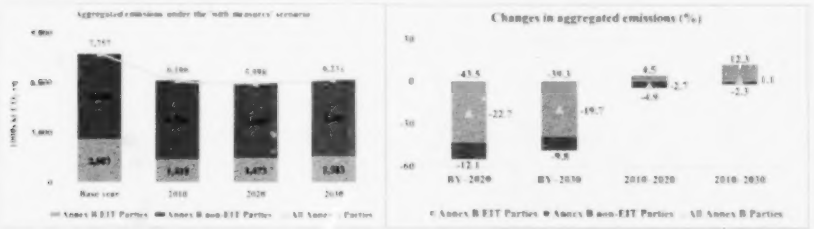
82. Total aggregate GHG emissions excluding LULUCF for all Annex B Parties taken together are projected to decrease in 2020 by 22.7 per cent compared with in the base year, from 7,757,331 kt CO_2 eq to 5,998,167 kt CO_2 eq, and by 2.7 per cent compared with the 2010 level (6,165,725 kt CO_2 eq). Between the base year and 2030, GHG emissions excluding LULUCF are projected to decrease by 19.7 per cent; however, between 2010 and 2030, an increase in emissions by 1.1 per cent is projected (see figure 9).

83. For Annex B Parties with economies in transition (Annex B EIT Parties), total projected emissions for 2020 are 43.5 per cent lower than the base year level. From the base year to 2030, the projected decrease in emissions is a bit smaller (39.3 per cent). This reflects a projected increase in the total GHG emissions by 4.5 per cent in 2020, and by 12.3 per cent in 2030 compared to the 2010 level.

84. For Annex B non-EIT Parties, emissions are projected to decrease in 2020 and 2030 but at a much lower rate compared to the EIT Parties. In the period from the base year to 2020, emissions are projected to decrease by 12.1 per cent; in 2030, the projected reduction compared with in the base year is 9.8 per cent. Compared with the 2010 level, emissions are also projected to decrease in 2020 and 2030, by 4.9 per cent and 2.3 per cent, respectively.

Figure 9

Projected greenhouse gas emissions of Annex B Parties excluding land use, land-use change and forestry under the 'with measures' scenario



Abbreviations: BY = base year, EIT Parties = Parties with economies in transition, non-EIT Parties = Parties that do not have economies in transition.

Projections under the 'with additional measures' scenario

85. Twenty-five Parties reported information under the 'with additional measures' scenario for 2020. For those Parties that did not report projections data for 2030, the same approach described in paragraph 81 above was applied. Regarding the 13 Parties that did

not report projections under the 'with additional measures' scenario, it has been assumed that the emissions under the 'with additional measures' scenario would be the same as those under the 'with measures' scenario for comparability purposes.

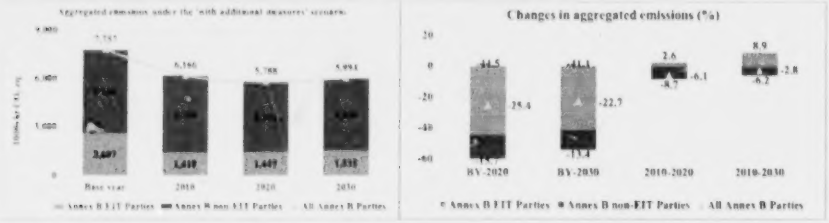
86. Under the 'with additional measures' scenario, a slightly higher decrease in emissions is projected in comparison with under the 'with measures' scenario. From the base year to 2020, GHG emissions excluding LULUCF are projected to decrease from 7,757,331 kt CO_2 eq to 5,787,804 kt CO_2 eq, or by 25.4 per cent. In 2030, GHG emissions are projected to drop by 22.7 per cent compared with in the base year. From 2010 to 2020, GHG emissions excluding LULUCF are projected to decrease by 6.1 per cent, and by 2.8 per cent between 2010 and 2030 (see figure 10).

87. Similar to under the 'with measures' scenario, the emissions of Annex B EIT Parties are expected to substantially decrease in 2020 and 2030 compared with in the base year, by 44.5 per cent and 41.1 per cent, respectively. However, compared with in 2010, emissions are expected to increase both in 2020 and 2030, by 2.6 per cent and 8.9 per cent, respectively.

88. For Annex B non-EIT Parties, total emissions are projected to decrease compared with in the base year by 15.7 per cent in 2020 and by 13.4 per cent in 2030. Compared with the 2010 level, GHG emissions are projected to decrease by 8.7 per cent in 2020 and by 6.2 per cent in 2030.

Figure 10

Projected greenhouse gas emissions of Annex B Parties excluding land use, land-use change and forestry under the 'with additional measures' scenario



Abbreviations: BY = base year, EIT Parties = Parties with economies in transition, non-EIT Parties = Parties that do not have economies in transition.

89. Box 3 provides a summary of the projected emission trends 2020 in relation to the target for the second commitment period of the Kyoto Protocol.

Box 3

Projected emission trends for 2020 in relation to the target for the second commitment period of the Kyoto Protocol

Under the 'with measures scenario', total aggregate GHG emissions for all Annex B Parties taken together are projected to decrease in 2020 by 22.7 per cent compared with in the base year, and by 25.4 per cent taking into account also planned measures, under the 'with additional measures' scenario.

The projections data for both the 'with measures' and 'with additional measures' scenarios suggests that the emission reduction target for Annex B Parties as a group of at least 18 per cent, as specified in annex I to decision 1/CMP.8, may be met by means of domestic action only. It should be noted that this is a very preliminary assessment, since some factors such as base year emissions, coverage of gases and

global warming potentials might change in accordance with the revised Annex I GHG inventory reporting guidelines.

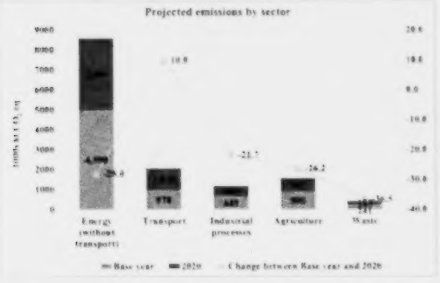
2. Projected changes in sectoral greenhouse gas emissions under the 'with measures' scenario

90. In general, all 38 Parties provided sectoral GHG emission data for 2020 under the 'with measures' scenario; however, for some Parties projections data were not available for all sectors. For 2030, five Parties (Belarus, Belgium, Bulgaria, Cyprus and France) did not provide sectoral GHG emission data.

91. Compared with in the base year, GHG emissions are projected to decrease in 2020 in all sectors, except transport (see figure 11). The largest decrease is expected to occur in the waste sector (by 36.5 per cent), followed by energy (by 28.0 per cent), agriculture (by 26.2 per cent) and industrial processes[7] (by 21.7 per cent). The increase in emissions from transport is expected to amount to 10.0 per cent, driven by the expected 10.3 per cent increase in emissions of the EU.

92. Emissions from the energy sector (excluding transport) are projected to make the largest contribution to the total emissions in 2020 (60.0 per cent), followed by transport (17.9 per cent) and agriculture (11.1 per cent). This suggests that the overall reduction in total emissions will continue to be defined by the decrease in emissions from stationary combustion.

Figure 11
Projected greenhouse gas emissions of Annex B Parties, by sector



C. Total effects of implemented and adopted policies and measures

93. According to the UNFCCC reporting guidelines, Parties are required to present the estimated and expected total effect of implemented and adopted PaMs in the form of GHG emissions sequestered or avoided for certain years, including 2020 and 2030. Parties may calculate the total effect of their measures by doing either of the following:

(a) Taking the difference between the projected GHG emissions under the 'with measures' and 'without measures' scenarios, if projections under the 'without measures' scenario were provided;

(b) Aggregating the effects of individual implemented and/or adopted PaMs.

94. Similarly, the estimated and expected total effect of planned PaMs is calculated by either taking the difference between the projected GHG emissions under the 'with

[7] Emissions from solvent and other product use are included here.

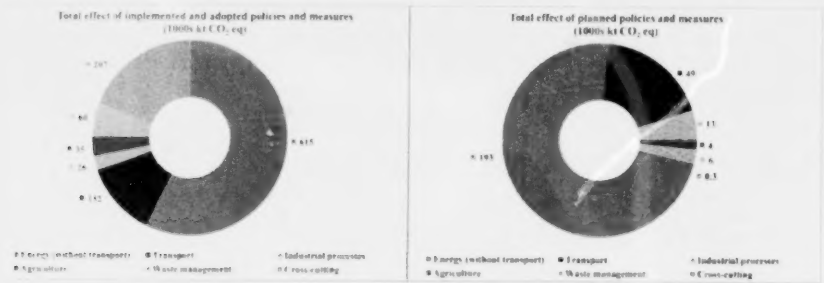
additional measures' and 'with measures' scenarios, where available, or by summing up the effects of individual planned PaMs.[8]

95. All Parties reported the projected effects of individual implemented and/or adopted PaMs in 2020. The implemented and/or adopted PaMs are expected to deliver emission savings of about 1,075 Mt CO_2 eq in 2020. If the additional or planned PaMs are taken into account, the emissions savings would amount to 1,341 Mt CO_2 eq. Figure 12 presents the estimated and expected total effects of implemented and/or adopted and planned PaMs by sector in 2020.

96. The highest impact of the implemented and/or adopted PaMs occurs in the energy sector, which accounts for 57.2 per cent of the total emission savings in 2020. The transport sector is projected to account for 12.3 per cent of the emission savings, and the remaining sectors (industrial processes, agriculture, waste and cross-cutting) for 30.5 per cent.

Figure 12

Estimated and expected effect of implemented and/or adopted ('with measures') and planned ('with additional measures') policies and measures of Annex B Parties in 2020 by sector



D. Projections data for individual Annex B Parties

97. The changes in the projected total GHG emissions under the 'with measures' scenario for individual Annex B Parties from the base year to 2020 varied significantly (see figure 13). Total GHG emissions for most Parties are expected to drop in 2020, while the emissions of nine Parties are projected to increase. The largest projected decrease is by 58.0 per cent (Estonia), followed by Romania, Ukraine and Bulgaria. The highest projected increase is by 43.3 per cent (Australia), followed by Spain and Iceland.

[8] Taking into account that both approaches have been used to calculate the effect of policies and measures, the total presented in this document may be underestimated.

Figure 13

Projected changes in the total aggregate greenhouse gas emissions excluding land use, land-use change and forestry of individual Annex B Parties in 2020 under the 'with measures' scenario

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

98. Table 3 provides information on the projected changes in GHG emissions in 2020 and 2030 compared with in the base year for each Annex B Party under both 'with measures' and 'with additional measures' scenarios. It also includes the emission reduction targets of each Annex B Party for the second commitment period of the Kyoto Protocol.

Table 3

Projected changes in the total aggregate greenhouse gas emissions excluding emissions/removals from land use, land-use change and forestry of individual Annex B Parties and their targets for the second commitment period of the Kyoto Protocol

		'With measures' scenario				*'With additional measures' scenario*				
		Projected emissions ($kt CO_2 eq$)		*Change compared with the base year (%)*		*Projected emissions ($kt CO_2 eq$)*		*Change compared with the base year (%)*		
Party	*Base year[a] emissions ($kt CO_2 eq$)*	*2020*	*2030*	*2020*	*2030*	*2020*	*2030*	*2020*	*2030*	*Kyoto Protocol target (%)*
Australia	414 974	594 773	589 197	43.3	42.0					–0.5
Austria	78 086	81 636	84 034	4.5	7.6	77 502	78 064	–0.7	0.0	–20.0[b]
Belarus	139 151	108 079	–	–22.3	–	–	–	–	–	–12.0
Belgium	142 952	120 625	–	–15.6	–	118 760	–	–16.9	–	–20.0[b]
Bulgaria	121 880	60 604	–	–50.3	–	54 108	–	–55.6	–	–20.0[b]
Croatia	31 680	31 270	31 599	–1.3	–0.3	31 270	26 173	–1.3	–17.4	–20.0[b]
Cyprus	6 088	3 937	–	–35.3		3 458	–	–	–	–20.0[b]
Czech Republic	196 146	122 697	109 646	–37.4	–44.1	120 844	106 801	–38.4	–45.6	–20.0[b]
Denmark	69 312	44 898	44 822	–35.2	–35.3	–	–	–	–	–20.0[b]
Estonia	40 615	17 060	16 165	–58.0	–60.2	16 550	15 797	–59.3	–61.1	–20.0[b]
European Union (15)	4 262 100	3 460 768	–	–18.8		3 281 882	–	–23.0	–	–20.0[b]
European Union (28)	5 626 260	4 359 151	4 238 897	–22.5	–24.7	4 156 344	3 922 351	–26.1	–30.3	–20.0[b]
Finland	70 329	64 292	50 632	–8.6	–28.0	62 322	45 362	–11.4	–35.5	–20.0[b]
France	557 351	463 650	–	–16.8		426 730	–	–23.4	–	–20.0[b]
Germany	1 248 049	837 000	718 000	–32.9	–42.5	–	–	–	–	–20.0[b]
Greece	104 927	104 852	100 184	–0.1	–4.5	103 876	94 899	–1.0	–9.6	–20.0[b]
Hungary	114 447	59 840	58 598	–47.7	–48.8	56 774	55 400	–50.4	–51.6	–20.0[b]
Iceland	3 538	4 338	4 314	22.6	21.9	–	–	–	–	–20.0[b]
Ireland	55 246	62 833	67 058	13.7	21.4	57 997	56 170	5.0	1.7	–20.0[b]
Italy	519 055	516 079	523 903	–0.6	0.9	455 037	430 977	–12.3	–17.0	–20.0[b]
Kazakhstan	357 602	357 600	494 900	0.0	38.4	–	–	–	–	–5.0
Latvia	26 213	13 800	16 034	–47.4	–38.8	13 134	15 145	–49.9	–42.2	–20.0[b]
Liechtenstein	228	194	177	–15.0	–22.5	–	–	–	–	–16.0

Party	Base year[a] emissions (kt CO_2 eq)	'With measures' scenario: Projected emissions (kt CO_2 eq) 2020	'With measures' scenario: Projected emissions (kt CO_2 eq) 2030	'With measures' scenario: Change compared with the base year (%) 2020	'With measures' scenario: Change compared with the base year (%) 2030	'With additional measures' scenario: Projected emissions (kt CO_2 eq) 2020	'With additional measures' scenario: Projected emissions (kt CO_2 eq) 2030	'With additional measures' scenario: Change compared with the base year (%) 2020	'With additional measures' scenario: Change compared with the base year (%) 2030	Kyoto Protocol target (%)
Lithuania	48 721	25 533	30 248	–47.6	–37.9	–	–	–	–	–20.0[b]
Luxembourg	12 901	12 786	13 864	–0.9	7.5	12 054	12 868	–6.6	–0.3	–20.0[b]
Malta	1 992	2 186	2 325	9.8	16.7	1 736	1 795			–20.0[b]
Monaco	110	83	76	–24.3	–30.9	–	–	–	–	–22.0
Netherlands	211 850	211 974	197 878	0.1	–6.6	202 834	184 639	–4.3	–12.8	–20.0[b]
Norway	50 409	54 400	52 200	7.9	3.6	–	–	–	–	–16.0
Poland	569 904	377 655	398 565	–33.7	–30.1	–	–	–	–	–20.0[b]
Portugal	60 767	59 632	53 327	–1.9	–12.2	–	–	–	–	–20.0[b]
Romania	285 048	132 911	147 457	–53.4	–48.3	129 892	143 891	–54.4	–49.5	–20.0[b]
Slovakia	73 227	44 492	45 291	–39.2	–38.1	42 295	42 941	–42.2	–41.4	–20.0[b]
Slovenia	20 195	20 351	19 087	0.8	–5.5	18 650	17 388	–7.6	–13.9	–20.0[b]
Spain	283 749	387 834	459 326	36.7	61.9	378 906	444 652	33.5	56.7	–20.0[b]
Sweden	72 714	59 155	57 328	–18.6	–21.2	58 735	56 958	–19.2	–21.7	–20.0[b]
Switzerland	52 890	46 491	39 826	–12.1	–24.7	42 781	31 014	–19.1	–41.4	–15.8
Ukraine	940 175	459 104	541 981	–51.2	–42.4	451 777	520 462	–51.9	–44.6	–24.0
United Kingdom	778 805	438 897	397 071	–43.6	–49.0	–	–	–	–	–20.0[b]

[a] Base year refers to 1990, except for those Parties that may use a different base year in accordance with decisions 9/CP.2 and 11/CP.4: Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989) and Slovenia (1986).

[b] The targets for the European Union and its member States are based on the understanding that this will be fulfilled jointly. The figures may change pending a final agreement by the European Union and its member States on the targets.

VI. Policies and measures in accordance with Article 2 of the Kyoto Protocol

99. This chapter outlines the climate change PaMs reported by 41 Parties in their NC6s and by Turkey in its NC5. Since Annex I Parties implement broadly the same set of PaMs under both the Convention and its Kyoto Protocol, this chapter essentially provides a summary of the relevant chapter of the compilation and synthesis of NC6s,[9] with a particular focus on Parties to the Kyoto Protocol.

A. Overview

1. Introduction

100. Some 1,289 implemented, adopted and planned mitigation PaMs, with highly diverse scopes and expected emission impacts, were reported. They are used at all levels of governmental jurisdiction – regional, national, state/provincial and municipal – to influence the investments, purchases and behaviours of numerous individuals and institutions involved in a myriad of activities related to energy supply, energy end-use and non-energy emissions.

2. General trends

101. Since 1 January 2010, when the NC5s were due, **Parties have added some important PaMs** to their portfolios for climate change mitigation, but **mostly they have worked at strengthening and refining their existing PaMs** – implementing more stringent features, achieving wider coverage and increasing resource expenditure. Overall, most Parties have kept to the general strategies and portfolios of PaMs reported as implemented or adopted in their NC5s. Notable exception is Australia, which has instituted major reforms to its climate change strategy and policies.[10] So, the general mix of PaMs – economic and fiscal instruments, regulations, voluntary/negotiated agreements, framework targets, information, education and awareness programmes, R&D and other instruments – reported in the NC6s is very similar to that reported in the NC5s.

102. **PaMs – along with some unrelated technology improvements, behavioural changes and economic and demographic shifts – are limiting growth in GHG emissions**. For example, among non-EIT Parties, Belgium, Denmark, the EU, Finland, France, Germany, Italy, Liechtenstein, Luxembourg, Monaco, Netherlands, Sweden, Switzerland and United Kingdom (without LULUCF), plus Norway and Portugal (with LULUCF), succeeded in reducing their GHG emissions in 2012 to below 1990 levels. Emissions in all EIT Parties also declined over the same period.[11]

103. The multitude of climate change PaMs is diverse and complex, but the following emerging trends are apparent:

(a) The first commitment period of the Kyoto Protocol (2008–2012) has passed, and **nearly all Parties have developed second commitment period quantified emission reduction targets (for 2013–2020)**;

[9] FCCC/SBI/2014/INF.20 and Add.1.

[10] The centrepiece of Australia's reforms, the carbon pricing mechanism emissions trading scheme, was repealed in July 2014, after the submission of its NC6.

[11] Calculations use 1990 data for all Parties, except those for which the base year is defined by decisions 9/CP.2 and 11/CP.4: Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989) and Slovenia (1986).

(b) To meet the 2020 targets, Parties **mostly strengthened and refined the details of their existing PaMs** (e.g. the EU ETS Phase 3 reforms) – to further reduce emissions, cut costs, diminish the administrative burden, etc. – as lessons are learned and market and technological conditions evolve. They also **implemented some major new PaMs** – some reported as planned in the NC5s (e.g. the EU effort-sharing decision); some new in the NC6s (e.g. Australia's CPM, which was repealed in 2014, and the EU energy efficiency directive);

(c) Many Parties now have their **broad, foundational PaMs in place** (e.g. carbon pricing systems, vehicle regulations, framework targets, and market reforms), and are increasingly using more flexible policy instruments – **framework targets, sometimes coupled with project funding** – to realize the mitigation potential in **niche – or site-specific – situations**. **Framework targets** (or effort-sharing commitments), in the context of multilevel governance, are used to devolve partial responsibilities for mitigation to lower levels of government (e.g. EU member States and states/provinces). They are increasingly specific – and often legally binding – in their mandates. The mitigation projects, **sometimes funded by Parties from recycled revenues from ETS auctions and carbon taxes or other sources**, are often administered by local authorities, which are closer to the niche opportunities;

(d) Parties, in the context of job creation and economic competitiveness, are increasingly supporting the **interests of their business and commercial enterprises** though PaMs focused on **low-carbon technology innovations and investments**;

(e) Parties continue to promote mitigation through PaMs traditionally associated with **energy goals** (e.g. vehicle fuel economy), but are increasingly drawing attention to the **emission reduction aspects** of those PaMs. For example, standards for vehicles in the EU are now defined in terms of both fuel economy and GHG emissions. Also, building labelling programmes in the EU include a measure of GHG emissions as well as energy use;

(f) In the light of the Fukushima Daiichi nuclear power plant accident, some Parties have decided to **re-examine the political viability of** (and, in some cases, phase out) **their use of nuclear power**;

(g) **Renewable energy production and use has grown rapidly** in recent years (during 2004–2012, the non-hydropower renewable energy sources in electricity generation (RES-E) share of total electricity consumption grew from 2.5 to 11.2 per cent in the EU), in part because of PaMs-based production targets and price incentives. This growth has contributed greatly to emission reductions, and many Parties are working towards still higher renewable energy targets in the 2020 time frame. However, as renewable energy technologies have matured and their costs have fallen, **some Parties are questioning whether current levels of incentives and subsidies are necessary to meet the higher targets**.

(h) Some Parties, namely Australia and the EU, have begun seeking – through ETSs and associated offset programmes – increased emission reductions in the oil, natural gas and coal sector (e.g. **fugitive emissions**) and in the **agriculture and forestry sectors**. The predominant focus of reported mitigation PaMs targeting non-energy sectors is on the waste and industrial processes sectors. Policies aimed at mitigation in the agriculture and LULUCF sectors were reported to a somewhat lesser extent, but have increased since the NC5s.

3. Types of policies and measures

104. Parties reported a wide variety of PaMs to mitigate GHG emissions in their NC6s. The variety reflects the great diversity of human activities – the numerous investments,

purchases and behaviours of many individuals and organizations in varying circumstances – that must be influenced to mitigate climate change. To help to understand the underlying structures of and trends in these diverse PaMs, they are characterized according to the following general types:

(a) Economic and fiscal measures, for example carbon and energy taxes, ETSs, other market instruments (other quotas and certificates) and reforms, and other fiscal and economic incentives (fees, rebates, subsidies and project funding);

(b) Regulations (rules, standards and permitting requirements);

(c) Voluntary and negotiated agreements;

(d) Framework targets with MRV of emissions;

(e) Information, education and awareness (labels, auditing, metering, advice and demonstration) programmes;

(f) R&D;

(g) Other, such as public property management and land-use policies.

105. The above-listed types closely follow those used in the compilation and synthesis reports of the fourth and fifth national communications. They help focus the compilation and synthesis, but offer only approximate descriptions of the PaMs, as some PaMs do not fit well within the categorization scheme and some PaMs contain elements of multiple categories.

4. Occurrence, distribution and effects of policies and measures

106. In total, Annex I Parties to the Kyoto Protocol reported 1,289 PaMs. Some 1,015 PaMs were aimed at single specified emitting sectors using single specified policy types, while 273 PaMs were classified as cross-sectoral and/or multi policy type. The most common targets of the reported PaMs were the energy (533 PaMs) and transport (303 PaMs) sectors. The energy and industry/industrial processes sectors are relatively more amenable to multisector PaMs. The transport, agriculture and forestry sectors are more suited to single sector-focused PaMs. The most common policy types are regulatory (455 PaMs), economic (367 PaMs) and information-related (128 PaMs).

107. Some 587 of the reported PaMs (not including those of the EU) were assigned estimates of their mitigation impact by 2020. The total estimated impact of those PaMs by 2020 is 1,202 Mt CO_2 eq. The highest-impact policy types are economic policies (1,082 Mt CO_2 eq)[12], regulations (529 Mt CO_2 eq) and voluntary approaches (202 Mt CO_2 eq). The sectors projected to experience the highest impact are the energy (748 Mt CO_2 eq) and transport (319 Mt CO_2 eq) sectors. More specifically, regulations applied in the energy and transport sectors seem to have the largest expected mitigation impact.

108. The 12 highest-impact PaMs, with impacts ranging from 50 to 750 Mt CO_2 eq emission reductions by 2020, are mostly regulatory policies aimed at the energy and transport sectors, but also include economic and voluntary policies. All are aimed primarily at reducing CO_2 emissions. Three of those high-impact PaMs were started during or after 2011 (i.e. they were newly reported in the NC6s).

109. Three quarters of the reported PaMs (accounting for 69 per cent of the total estimated mitigation impact) have already been implemented. Some 14 per cent of the PaMs (accounting for 24 per cent of the total estimated mitigation impact) have been

[12] This figure includes the UNFCCC estimate of the emission reduction impacts of the EU ETS to be 530 Mt CO_2 eq by 2020 (compared with 2005) (see document FCCC/SBI/2014/INF.20/Add.1).

adopted, but not yet implemented. About 18 per cent of the implemented PaMs, 44 per cent of the adopted PaMs and nearly 61 per cent of the planned PaMs started during the reporting period of the NC6s, accounting for 27 per cent of the estimated mitigation impact by 2020.

110. About half of the reported PaMs were aimed solely at achieving CO_2 emission reductions and accounted for 54 per cent of the total estimated mitigation impact. Some 38 per cent of the PaMs are aimed at reducing the emissions of multiple GHGs.

B. Climate policy ambition and implementation strategies

1. Climate policy ambitions

111. Several Parties have a quantified emission limitation or reduction commitment for the period 2013–2020 inscribed in Annex B to the Kyoto Protocol (see table 2). The commitments vary from 76.0 to 99.5 per cent of the base year or period.

112. Some Parties (Australia, Finland, Germany, Japan, Monaco, Norway and United Kingdom) have also established additional, more ambitious, targets for the post-2020 time-horizon: typically, emission reduction targets of about 80 per cent below the base year emission level by 2050. Monaco and Norway envisage to being carbon neutral by 2050 or earlier. The United Kingdom's carbon budgets introduce the concept of targets with binding milestones and other Parties (e.g. Australia and the EU) complement their emission targets by quantitative goals for renewable energy production and energy efficiency performance.

2. Implementation, multilevel governance and accountability

113. Parties are making increasing use of multilevel governance to better target PaMs in line with the diverse circumstances existing within their jurisdictions. In some cases, higher-level governments initiate the policy and then devolve the responsibility for mitigation to lower-level governments, which must implement their own PaMs to achieve the emission reductions. EU member States have responsibilities devolved to them by the European Commission; while states and provinces have obligations devolved to them by national governments. In other cases, lower-level governments initiate and implement PaMs themselves in order to take advantage of local opportunities.

Initiated by national or European Union governments

114. Mitigation responsibilities can be devolved to lower-level governments through framework targets, political mandates, cooperative agreements, recommendations, etc. In some cases, specific mitigation measures are prescribed in the devolution process. In others, only framework targets or project funding levels are prescribed and the government or private parties assuming responsibility decide what measures to implement (e.g. the EU renewable energy directive). The targets and budgeting processes provide a long-term vision to guide general activity, while implicitly recognizing that the diversity of regional, national and local circumstances demands tailored implementing measures.

Multisector framework targets

115. **Framework targets** establish legally binding (i.e. mandatory) or indicative (i.e. voluntary) goals for GHG emissions (carbon budgets), technology shares, fuel shares and efficiency, followed up by MRV procedures to ensure compliance. They are intermediate PaMs used by Parties to focus the direction and stringency of their operational PaMs or to partially shift responsibility for mitigation to lower levels of government, which must then

implement their own operational PaMs (e.g. economic incentives and market instruments) to achieve the targets.

116. Framework targets are used mostly in the areas of electricity and heat generation, transport fuel supply and emissions from landfills. They are used most heavily by the EU, most notably in the EU climate and energy package of specific targets for 2020, but other Parties use them as well.[13] They involve setting goals (e.g. to achieve by 2020 a 20 per cent share of final energy consumption from renewable energy sources (RES)), but leaving the development and implementation of specific measures to the EU member States.

117. The most prominent EU directives of this type are: the EU effort-sharing decision (see para. 118 below); the EU directive on the promotion of the use of energy from RES (see para. 119 below); the EU landfill (of waste) directive (see para. 189 below); the EU packaging and packaging waste directive; and the EU waste electrical and electronic equipment (WEEE) directive (see para. 190 below). The recent EU energy efficiency directive contains both framework targets and prescriptive injunctions on specific PaMs to achieve the required goals (see para. 157 below). Ireland and United Kingdom have introduced carbon budgets that set legally binding limits on the total GHG emissions allowed in successive time periods, which are further broken down into carbon budgets for each government department. Other Parties devolve responsibility through funding mechanisms.

118. The **EU effort-sharing decision (406/2009/EC)** establishes legally binding annual targets for the emissions of EU member States from sectors not covered by the EU ETS (non-ETS sectors) during the period 2013–2020. The sectors covered include: transport (except aviation), buildings, agriculture (excluding LULUCF) and waste. Each member State must define and implement national PaMs (i.e. promotion of public transport, energy performance standards for buildings, more efficient farming practices and conversion of animal waste to biogas) to limit the GHG emissions from those sectors.

119. The **EU renewable energy directive (2009/28/EC)** sets targets for the share of energy from renewable sources in the gross final consumption of each EU member State. Member States have prepared and submitted National Renewable Energy Action Plans, which set out their national targets for the share of energy from renewable sources at a sectoral level, taking into account the effects of other policy measures, and they have to report biennially on their progress in the promotion and use of energy from renewable sources.

Initiated by state or local governments

120. In some cases, PaMs are initiated by the lower levels of government in the absence of consensus at the higher levels or to take advantage of local opportunities. For example, a local ETS has been established in Tokyo.

Measurement, reporting and verification

121. Rigorous **MRV** of PaMs and emission trends is growing in importance as Parties increasingly devolve responsibility for mitigation to lower levels of government and as they make greater use of project-level emission reductions. MRV increases the accountability of

[13] The EU climate and energy package encompasses: (a) a target to reduce GHG emissions by at least 20 per cent compared to 1990 by 2020, with a commitment to increase that target to 30 per cent in the event of a satisfactory international agreement being reached; (b) a target to achieve 20 per cent of energy from renewable sources by 2020 (as a share of total EU gross final energy consumption), supplemented by a target to achieve a minimum of 10 per cent renewable transport fuel; and (c) a reiteration of the commitment to save 20 per cent of total primary energy consumption by 2020, compared with a 'business as usual' baseline.

the entities responsible for the actions. It also alerts to the need for possible mid-course revisions to PaMs, on the basis of their real (ex post) versus projected (ex ante) performance. Furthermore, MRV increases the credibility of emission reductions resulting from projects generating carbon offsets, thus increasing the market value of those offsets (see para. 124 below).

122. Among the largest MRV efforts is the EU **monitoring mechanism regulation (MMR)** (525/2013) and the associated **European Semester**. MMR, which entered into force in July 2013, enhances the EU GHG monitoring mechanism, which was established in 1993 and revised in 2004. It aims to improve the quality of the data reported, to help the EU and its member States to keep track of progress made towards meeting their emission targets for 2013–2020 and to facilitate the further development of the EU climate policy mix. The related EU European Semester is a policy coordination exercise which assesses the progress made by each member State in meeting the targets set out in the Europe 2020 strategy, including targets set out in the EU climate and energy package (for further information on the EU MRV efforts, see document FCCC/SBI/2014/INF.20/Add.1).

123. **Japan's GHG Emissions Accounting, Reporting and Disclosure System** obliges emitters that exceed an annual fuel consumption of 1,500 kilolitres of crude oil equivalent, an electricity consumption of 6 GWh or, if they have more than 20 full-time employees, emissions of 3,000 t CO_2 eq to measure and report their emission volumes annually to the Government. The Government administrates the monitoring and reporting system by collecting and sorting out the reported data and disclosing it to the public.

124. Parties have also established **certification programmes** for the generation and use of their carbon offsets. Among them is the **Australian Carbon Farming Initiative (CFI)**, which is a voluntary carbon offset scheme for farmers and land managers. The generated carbon credits can then be sold on the national carbon market. Also **Japan's J-Credit scheme**, established in April 2013, certifies credits generated from GHG emission reductions resulting from the introduction of energy-saving equipment, the use of renewable energy, and carbon sinks through appropriate forest management. The generated credits can be used to achieve the goals of the Commitment to a Low Carbon Society and for carbon offsetting, among others. **Green investment schemes** (GISs) have been established in EIT Parties to improve the environmental characteristics, and thus the marketability and value, of assigned amount units (AAUs). The goal is to assure buyers of AAUs that, even though the AAUs themselves may appear as surplus, their revenues will be spent on 'green' activities. GIS activities were reported to be taking place in Bulgaria, Czech Republic, Estonia, Hungary, Lithuania (plans), Poland, Romania (under study), Slovakia and Ukraine (establishment of a legal system).

C. Implementation of cross-cutting policies and measures

125. Most PaMs are targeted at reducing emissions within a single sector, but some are broader and aimed at reducing emissions in multiple sectors. They can, in the case of some Parties, be wide in scope – in terms of sectors and gases – but they are rarely used on an economy-wide scale. The most common cross-cutting, multisector policies are **ETSs, carbon and energy taxes, project funding, R&D, and urban and regional development**.

1. Emissions trading schemes

126. **ETSs** are the most widely used cross-cutting instrument. As at April 2014, there were seven active ETSs in Parties to the Kyoto Protocol: in Australia, EU, New Zealand, Norway, Switzerland, Tokyo and United Kingdom. Conversely, 35 of the 42 Annex I

Parties have national ETSs or participate in multinational ETSs, and another Party (Japan) has a subnational ETS within its borders. ETSs vary in scope, but most are aimed at reducing CO_2 emissions from electricity generation, industrial energy use and sometimes other sectors. They tend to expand to cover additional sectors and gases as they mature.

127. Since the NC5s, the following ETSs have been launched, linked or strengthened:

(a) Australia's ETS (repealed in July 2014);

(b) The Swiss ETS and the EU ETS (linking discussions);

(c) The EU ETS (increase in coverage, third phase (2013–2020) provisions and discussions on 'backloading').

128. **Australia's CPM** of the Clean Energy Future Plan began in 2012 and was to link with the EU ETS in 2015, but was repealed in 2014. The ETS covered about 60 per cent of Australia's total emissions, including those from stationary energy, industrial processes, fugitive emissions from production of coal and gas and emissions from waste. An equivalent carbon price was also to be applied to some transport fuels through the existing fuel tax regime and to synthetic GHGs through the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989. Emissions not covered by the carbon price included emissions from the agriculture and forestry sectors, some emissions from transport and emissions from the combustion of biofuels and biomass. CPM was tied to the CFI, which certifies offset credits for emission reductions in the agriculture and land-use sectors.

129. **The EU ETS** — the world's largest ETS, encompassing about 11,000 large installations in the 28 EU countries, Iceland, Liechtenstein and Norway — **increased its sectoral and GHG coverage in 2012 and increased its stringency in 2013**. From its initial coverage, the EU ETS was expanded in 2012–2013 to include more sectors and gases. And from 2013, a single, EU-wide cap on emissions applies, allowances are mainly auctioned and EU-wide benchmarks were introduced for free allocation of allowances (for further information on the EU MRV efforts, see document FCCC/SBI/2014/INF.20/Add.1).

2. Carbon and energy taxes

130. **Carbon taxes** are used at the national level by 10 Parties, mostly in northern Europe. They have been a cornerstone of climate policies in Denmark (CO_2 tax), Finland (CO_2 tax), Netherlands (energy tax), Norway (CO_2 tax) and Sweden (CO_2 tax) since the early 1990s. More recently, they have been introduced in Germany (ecological tax), Ireland (CO_2 tax), Liechtenstein (CO_2 levy), Slovenia (CO_2 environmental tax), Switzerland (CO_2 levy) and United Kingdom (climate change levy).

131. Where they are used, carbon taxes are typically applied to a wider range of sectors (e.g. electricity generation, transport, residential, commercial, public, less energy-intensive industrial sectors, and sometimes more energy-intensive industries as well) than ETSs. Carbon taxes are not yet applied to non-energy sources of GHG emissions. Among the 11 European Parties having both carbon taxes and ETSs, some offer special carbon tax exemptions for installations in the EU ETS, while others do not. In Switzerland, exemptions from CO_2 taxes are offered as an incentive to encourage firms to participate in the ETS.

132. Since the early 2000s, there has been much less policy effort directed at introducing new carbon taxes than at developing ETSs. However, carbon taxes have still been put forward as an alternative CPM during policy deliberations in some countries, especially when the complexities and shortcomings (e.g. price levels and price stability) of emission allowance systems are discussed. Furthermore, some Parties (e.g. Norway and United Kingdom) are treating carbon taxes and ETSs as complementary measures, with the latter

aimed at energy-intensive sectors, such as power generation and industry, and the former focused on the residential and commercial sectors.

133. The United Kingdom introduced a **carbon price floor**, a tax on fossil fuels used to generate electricity, in April 2013. It changes the existing climate change levy regime by applying carbon price support rates to gas, solid fuels and liquefied petroleum gas. The minimum carbon price is meant to send an early and credible signal to incentivize billions of pounds of investment in low-carbon electricity generation now by providing certainty of the carbon price.

134. **Energy taxes** (e.g. ad valorem and excise taxes), which greatly influence energy use and GHG emissions, are used by all Annex I Parties. The primary purposes of energy taxes have historically been revenue generation and oil security. However, Parties are increasingly using their energy taxes to further their emission reduction goals by differentiating rates to favour RES (e.g. tax exemption for biofuels).

3. Project funding

135. Direct **project funding**, though reported in previous national communications, has grown recently, owing to the greater responsibility for mitigation actions given to lower-level governments (via **framework targets**) and to increases in funding (from **ETS revenues** and other sources).

136. The revised **EU ETS directive** stipulates that at least half of the **revenues from the auctioning** of general allowances and all of the revenues from auctioning aviation allowances should be used **should be used,** via fiscal or financial support policies or regulatory provisions, **to combat climate change,** by means specified in the directive, **in Europe or other countries**. Member States are obliged to inform the European Commission of how they use the revenues. However, few EU member States have actually earmarked their revenues from EU ETS auctions to fund climate change actions. Among them, **Germany's Special Energy and Climate Fund**, financed by EU ETS revenues, funds the German Government's support of energy-efficient refurbishing and construction of housing and energy-related refurbishment of buildings used for municipal and social services infrastructure. Programme funding totalling EUR 1.5 billion annually is available from the Special Energy and Climate Fund from 2012 to 2014 to finance the Kreditanstalt für Wiederaufbau (KfW) development bank's Energy-Efficient Building and Energy-Efficient Refurbishment programmes.

137. **Australia's Clean Energy Finance Corporation (CEFC)** is an Australian Dollar (AUD) 10 billion corporation that has invested in clean energy projects since 1 July 2013. The investments will deliver the financial capital needed to help Australia's economic transition to cleaner energy sources. CEFC will seek to co-finance clean energy projects with the private sector, working with the market to build industry capacity. The investments of CEFC will be divided into two streams, the renewable energy stream and the clean energy stream. A variety of funding tools will be used to support projects, including loans on commercial or concessional terms and equity investments. To ensure that CEFC has continuing and stable funding, the capital returned on its investments will be reinvested.

4. Research and development

138. **R&D** activities were reported by Australia, Denmark, EU, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Switzerland and United Kingdom. Many other Parties reported contributions to joint international research efforts. R&D efforts are intended to improve the technical capacity to reduce emissions and also to improve Parties competitive position in the potential markets for new technologies. The EU funds some of its demonstration projects using revenues from the EU ETS under the **New Entrants'**

Reserve allowance auction (known as the **NER300**, after the 300 million allowances of that type), which aims to establish a demonstration programme comprising the best possible **carbon dioxide capture and storage (CCS)** and **innovative RES technology** projects and involving all member States.

139. All emission reduction technologies can benefit from additional R&D, but the ones offering the largest potential emission reductions and facing the biggest technological challenges are: CCS, hydrogen networks, fuel cells, cellulosic biofuels and solar power options. Owing to the long-term nature of R&D efforts, Parties are rarely able to estimate their specific effects on emissions.

140. Various long-term R&D efforts are directed at electricity and heat generation. Japan funds the development of CCS and advanced nuclear fission power technologies. The EU Seventh Framework Programme (FP7), which ran from 2007 to 2013, included European Technology Platforms, industry-led initiatives operating under the coordination of the Directorate-General for Research and Innovation and of a dedicated European Commission Inter-Service Group for zero-emission fossil fuel power plants and for photovoltaics, wind energy and biofuels. Australia has released technology road maps to advance solar thermal energy and geothermal energy. Germany's Innovation and New Energy Technologies programme supports a wide range of climate-related R&D efforts, including on: power station technologies, combined heat and power (CHP), district heat, fuel cells, hydrogen, wind, bioenergy and biomaterials, efficient electricity use, storage systems, energy and resource efficiency in the construction sector, and energy efficiency in industry, commerce, trade and services. The programme also includes measures for supporting research into safety and final storage for the nuclear sector.

5. Urban and regional development

141. **Urban and regional development** seeks to gain efficiencies and emission reductions through tighter integration among the components of large systems and networks. Japan has measures in place to make urban design, transport networks, power networks and industrial parks more climate-friendly. Japan reported its intention to encourage low-carbon urban and regional structures and socioeconomic systems in the mid and long terms. It will promote: non fossil fuel energy use; citizen- and business-led GHG emission reductions; the rearrangement and improvement of regional environments (i.e. the promotion of the convenience of public transportation); improved energy use through the holistic and efficient use of energy; the implementation of countermeasures against urban heat islands; and the formation of Compact Cities by concentrating urban functions.

D. Implementation of policies and measures by sector

1. Energy supply

142. The predominant focus of mitigation PaMs in the energy supply sector is on electricity and heat generation and, increasingly, on transport fuels (see paras. 170–179 below). Those aimed at reducing fugitive emissions from oil, gas and coal facilities were reported by only a few Parties.

Electricity and heat

143. Parties reported using substantially strengthened **ETSs and framework targets** (delivered through **economic incentives and other market instruments**), in addition to the continued use of **voluntary sectoral commitments, regulations** and **long-term R&D**, directed at electricity and heat generation, in order:

(a) To increase the share of energy generation from sources that are less carbon-intensive than coal (i.e. RES, conventional and shale-based natural gas, and nuclear energy);

(b) To increase generation, transmission and distribution efficiency through CHP, grid upgrades, distributed (i.e. small-scale) generation and other means;

(c) To stimulate the development, deployment and dissemination of CCS in the longer term.

144. **ETSs** are used to promote the reduction of emissions from electricity and heat generation by all technical means. All of the active ETSs, except the United Kingdom's Energy Efficiency Scheme and the Tokyo Cap-and-Trade Program, cover the power sector. There is little information reported in the NC6s on the actions undertaken by installations to reduce emissions and their effects so far. However, the NC6 of the EU shows that the average annual emissions from all EU ETS installations (mainly power plants) in 2008–2012 were 135.2 Mt CO_2 eq, or 6 per cent, lower than in 2005.

Renewable energy sources in electricity generation

145. Encouraging the use of RES-E is a prominent part of many Parties' efforts to reduce emissions from electricity and heat generation.

146. In their NC6s, as in their NC5s, Parties reported PaMs to encourage the use of RES-E, including **framework targets** (EU and Russian Federation), **green certificates** (Australia) and **tariff premiums** (Ukraine). Most EU member States reported meeting their RES-based electricity targets through **feed-in tariffs** (fiscal incentives), while others, such as Poland, Romania and Sweden, use **green certificates (other market instruments)**, and still others, such as Belgium, Italy and United Kingdom, use both **feed-in tariffs and green certificates**. Furthermore, some EU member States use additional **investment grants, tax exemptions and fiscal incentives** to promote RES-based electricity generation. According to Eurostat, the contribution of RES-E to total gross electricity consumption in the EU and its 28 member States rose from 14.3 per cent in 2004 to 23.5 per cent in 2012. At present, many EU member States are **reviewing their national RES-E PaMs to improve their overall cost efficiency**.

147. Other programmes to promote RES-E include: the **Australian Renewable Energy Certificates** (green certificates) programme, which requires wholesale electricity companies to purchase increasing amounts of RES-E to meet the country's 20 per cent by 2020 renewable energy target.

148. There are also R&D efforts on RES-E. Australia (Renewable Energy Demonstration Programme), Japan and New Zealand are offering new financial and technical assistance for various aspects (i.e. feasibility studies, R&D, the deployment of pre-commercial devices and the construction of commercial installations) of new renewable-based electricity generation projects.

Natural gas, nuclear power, combined heat and power and grid

149. Several Parties (Australia (Queensland), Greece, Japan and Portugal) use **regulations** and **economic incentives** to increase the use of natural gas in electricity generation.

150. Finland uses permitting approval (regulation) to promote the construction of nuclear power plants. Japan uses regulations to ensure power transmission capacity, so that long-term and stable nuclear power generation is feasible and economically attractive. Japan also uses public funding (fiscal incentives) to reprocess spent nuclear fuel. In the light of the

Fukushima Daiichi nuclear power plant accident, some other Parties (e.g. Germany and Switzerland) have decided to phase out their use of nuclear power.

151. Parties also use measures to advance specific technologies (e.g. CHP, nuclear power and grid improvements). Netherlands, Poland and the Flemish region of Belgium promote electricity production from CHP though the use of a blue certificates programme. The EU energy efficiency directive (first reported in its NC6) includes changes concerning cogeneration and district heating and cooling (repealing the cogeneration directive (2004/8/EC)). All EU member States are obliged to assess their potential for high-efficiency cogeneration and efficient district heating and cooling by 31 December 2015. They have to develop policies that promote efficient heating and cooling systems at the local and regional levels, especially in connection with high-efficiency cogeneration.

152. Some Parties mandate that electricity utilities take responsibility for helping consumers to save energy and reduce emissions. Energy-saving (white certificates) programmes are used in Denmark, France, Italy and United Kingdom, and in New South Wales, Australia and the Flemish region of Belgium.

Fugitive emissions from oil, gas and coal facilities

153. In the NC6s, Parties reported the use of **regulations** in Norway and Poland and **voluntary sectoral commitments** in the Netherlands to enhance the capture and use or flaring of fugitive CH_4 emissions at oil, gas and coal production and distribution facilities.

154. New provisions to include fugitive CH_4 emissions in **ETSs** were reported by Australia and the EU. The Russian Federation and Ukraine reported activities aimed at stemming losses in natural gas transportation.

2. Energy consumption

155. Mitigation PaMs have been implemented in all of the major energy end-use sectors: residential, commercial and public, industry and transport. Most of the PaMs focus on improving **energy efficiency** (as opposed to fuel switching).

156. Most energy consumption related PaMs are sector specific or even more narrowly targeted. However, there are some broader policies being pursued, such as Japan's systems-oriented policies (e.g. urban design), reported in previous national communications.

Multisector energy efficiency

157. The EU has implemented a multisector, multi-PaM policy package aimed at energy efficiency. The **EU energy efficiency directive (2012/27/EU)**, first reported in its NC6, is a package comprising **framework targets, market reforms, regulations, public facilities management, and information and awareness**, aimed at improving energy efficiency in all sectors to achieve the EU target, reported in its NC5, of a 20 per cent reduction of primary energy consumption by 2020 (for further information on the EU energy efficiency directive, see document FCCC/SBI/2014/INF.20/Add.1).

Residential, commercial and public

158. Parties reported the continued use of **regulations, fiscal incentives, framework targets, information, public facilities management and carbon taxes**:

(a) To increase the energy efficiency of new and existing residential, commercial and public buildings, including their space heating, cooling and ventilation, water heating and lighting services (via designing, building, renovating and purchasing);

(b) To increase the energy efficiency of household appliances, home entertainment devices, office equipment (via manufacturing, retailing and purchasing) and lamps;

(c) To increase the use of alternative energy supplies.

159. **Regulations (mandatory standards)** are widely used for **buildings**. Mandatory energy efficiency requirements for residential and commercial buildings, reported in the NC5s, continue to be used in Australia (National Construction Code). EU member States have begun implementing more stringent building codes, newly reported in the NC6s, to comply with the EU energy performance of buildings directive, reported in the NC5s.

160. All Parties use **regulations (mandatory standards)** to a lesser or greater extent for **household appliances**, home entertainment devices, office equipment and, increasingly, lamps. Many Parties are undertaking programmes to phase out the use of incandescent light bulbs. Japan's Top Runner standards programme, reported in its NC5, is unique in that it automatically recalibrates itself. Future standards are based on the most energy-efficient model on the current market, and the process periodically repeats itself. Australia's standards programme, also reported in its NC5, set its energy efficiency target at the equivalent of a world-best regulatory target or a more stringent level developed specifically for Australia.

161. **Information**, primarily labels, ratings and certification programmes, is likewise used widely for appliances, devices and equipment, and increasingly for buildings as well.

162. **Fiscal incentives (subsidies and tax incentives)** reported in the NC5s continue to be used for: energy efficiency improvements in low-income households in the United Kingdom; solar water heating in Portugal; solar, water and energy-efficient technologies in Australia; refurbishment of existing buildings and implementation of renewable heating systems, waste heat use and services engineering in Switzerland; and energy-efficient motors, lighting and building energy management systems in Ireland.

163. Many Parties are beginning (or planning) the wide-scale deployment of **smart meters and associated information and energy management services**, which will enable households and businesses to be more aware of their energy consumption patterns and to make behavioural and investment decisions accordingly (for further information on smart metering, see document FCCC/SBI/2014/INF.20/Add.1).

Industry

164. Parties reported on the continued use of **ETSs, regulations, voluntary sectoral commitments, voluntary enterprise partnerships, information and long-term R&D**:

(a) To increase energy efficiency and general emission reductions (i.e. not targeting specific equipment and processes) in energy-intensive industries;

(b) To increase the implementation of energy-efficient methods (e.g. energy management systems);

(c) To increase the use of energy-efficient equipment (e.g. motors, boilers and lighting), particularly, but not exclusively, in small and medium-sized enterprises;

(d) To promote long-term R&D of CCS by energy-intensive industries.

165. Historically, most PaMs have focused on energy efficiency and general emission reductions in energy-intensive industries. Increasingly, PaMs are also being aimed at less energy-intensive industries. Research on industrial CCS continues to be directed at energy-intensive industries.

166. **ETSs** have become the highest-profile method of promoting general emission reductions and encouraging long-term interest in CCS in energy-intensive industries. All of the active ETSs, except the Tokyo Cap-and-Trade Program, cover the industrial sector.

167. **Voluntary sectoral commitments** were once the most important measure aimed at achieving emission reductions and energy efficiency in the industrial sector, but have been overshadowed in recent times by **ETSs** in many regions. The industrial sector agreements in European Parties have been eclipsed by the EU ETS for emission-intensive industries, but are still playing a role in less emission-intensive, non-ETS sectors. In Japan, **voluntary sectoral commitments** are still considered to be important mitigation PaMs in the industrial sector. The Commitment to a Low Carbon Society **voluntary sectoral commitments** were first reported in its NC5 (for further information on Japan's voluntary sectoral commitments, see document FCCC/SBI/2014/INF.20/Add.1).

168. **Regulations** (not related to ETSs) aimed at achieving emission reductions and energy efficiency are used in only a few special circumstances in the industrial sector because of the diversity of industrial processes and equipment. **Regulations** have been established in Japan, which require industrial companies to benchmark their energy efficiency level against others within the same subsector and to meet medium- and long-term targets.

169. Other PaMs reported in earlier national communications continue to be used, but have not changed significantly since then. There are **voluntary enterprise partnerships**, such as the EU Motor Challenge Programme, **benchmarking**, **best available technologies** and **best practice programmes**. Other measures include: long-term R&D being pursued in relation to CCS and industrial technologies in the EU, and systems approaches for energy interchange among multiple entities, including the interchange among businesses of factory exhaust heat in industrial complexes and others of high industry concentration, which are being explicitly investigated by Japan.

Transport

170. Parties reported PaMs with two major objectives in the transport sector:

(a) Addressing transport fuel supply: reducing the carbon intensity of the transport fuel mix immediately through increased use of biofuels, but, in the long term, also through the use of electricity, fuel cells and hydrogen;

(b) Addressing transport fuel demand: increasing the efficiency and effectiveness of transport services and promoting non-motorized modes of transport.

Transport fuel supply

171. Parties reported on the continued use of **framework targets** (delivered through **economic incentives and other market instruments**), **regulations, other market instruments and long-term R&D** to increase the production, use and environmental sustainability of liquid RES fuels (biofuels), particularly in:

(a) The EU, where the EU renewable energy directive (framework target) sets a mandatory target of 10 per cent for the share of renewable energy of fuels consumed in the transport sector by 2020, which can include biofuels, renewable electricity or hydrogen originating from RES, and incorporates sustainability criteria for biofuels and bioliquids; where the fuel quality directive introduced a binding target for fuel suppliers to reduce life-cycle GHG emissions per unit of energy by up to 6 per cent by 2020 compared with in 2010; and where the Clean Power for Transport package (adopted in 2013) supports the broad deployment of alternative-fuel vehicles and vessels and the relevant infrastructure in Europe;

(b) Switzerland, where new tax incentives compensated for by increased tax rates on petrol are provided for the use of low-carbon fuels, including tax reductions for natural gas and liquid petroleum gas and complete tax exemptions for biogas and other biofuels fulfilling social and ecological criteria, such as: a minimum 40 per cent GHG emission reduction based on life-cycle analysis; a net environmental burden not significantly exceeding that of fossil fuels; and that the cultivation of biofuels must not endanger biodiversity, in particular in rainforests;

(c) New Zealand, where the ETS encompasses liquid fossil fuels.

172. Elsewhere, fiscal incentives (grants) are used in Australia to expand biofuel capacity and production and to support cost-effective abatement opportunities. Other measures include agricultural market reform, with its long-term fiscal incentives for biocrop production (European Commission).

173. The longer-term **R&D programmes** are focused on the on-board technology and the supporting fuelling infrastructure that would enable the widespread use of alternative-fuel vehicles, such as those that run on biofuels, electricity and hydrogen. Japan funds programmes on fuel cells and hydrogen. The EU FP7 includes a European Technology Platform for hydrogen and fuel cells. Japan is promoting systems approaches to emission reductions in transportation and shipping and distribution. Australia announced the Second Generation Biofuels Research and Development Program in 2008 and has released a technology road map to advance hydrogen and fuel cell technology.

Transport fuel demand

174. Parties reported on the continued use of **regulations, ETSs, fiscal incentives and information programmes**, as well as the continued use of **regulations, voluntary sectoral commitments, fiscal incentives, information and long-term R&D**:

(a) To improve the energy efficiency and CO_2 emission intensity of road vehicle fleets;

(b) To address transport activity and structure through transport demand management (including intelligent transport systems), incentives for modal shifts towards less-polluting transport modes, such as public transport, cycling and walking, traffic-flow improvements and spatial planning;

(c) To improve the CO_2 emission intensity of domestic and international aviation.

175. **Road vehicle fuel economy and CO_2 emission standards**, implemented increasingly via **mandatory regulations** (replacing voluntary approaches), have the highest mitigation impact of all transport-related measures. Many of the standards have been newly established or substantially strengthened since the NC5, including the following:

(a) The EU CO_2 and cars regulation, which sets emission performance requirements for new passenger cars as part of an integrated approach to reducing CO_2 emissions from light-duty vehicles. Under the regulation, the fleet average to be achieved by all new cars is 130 g CO_2/km by 2015 – with the target to be phased in from 2012 – and 95 g/km by 2020. The 2015 and 2020 targets represent reductions of 18 per cent and 40 per cent, respectively, compared with the 2007 fleet;

(b) Japan's revised Top Runner standards programme, which emphasizes periodic recalibration for the continued improvement of automobiles (regulation).

176. Since the NC5s, the **EU ETS** has been expanded to partially cover the transport sector, with the planned addition of aviation being implemented only for flights within the EU member States, Iceland, Liechtenstein and Norway and between closely related

territories. The planned coverage of other flights arriving at and departing from airports in the EU member States, Iceland, Liechtenstein and Norway was put on hold. The 'stopping the clock' decision was taken in order to facilitate the negotiation of a global agreement on emissions from aviation within ICAO.

177. In **Australia** a carbon price is being applied through changes in **fuel tax credits or excise** for domestic aviation, domestic shipping, rail transport and non-transport use of fuels. The Australian Government is also seeking to establish an effective carbon price for heavy on-road liquid fuel use from 1 July 2014.

178. **Fiscal incentives** have been introduced to promote efficient vehicles in France (i.e. bonus-malus) and to support the development of electric cars in New Zealand and Portugal. **Regulations and information (labels)** on the performance of tyres have been established in the EU. **Information (labelling)** on vehicles has commenced in New Zealand. Bulgaria is planning to introduce **intelligent transport systems** within the national and urban road networks.

179. There are other PaMs reported in the NC5s that continue to be used, but have not changed significantly. There are **fiscal incentives**, such as differentiated vehicle taxes and fees used in many European countries, and infrastructure charging on heavy-goods vehicles used in Austria. Switzerland has an **obligation** for transport fuel importers **to offset 5–40 per cent of transport-related CO_2 emissions** as of 2013. **Information (mandatory labels)** is used in Australia and the EU to show consumers the fuel economy and CO_2 emissions of new cars in order to encourage them to buy fuel-efficient models. In the longer term, Japan is promoting **systems approaches** to reducing emissions from transportation and shipping and distribution.

3. Industrial processes

180. Parties reported new use of **ETSs** and **information** and continued use of their previous **regulations, reporting, voluntary sectoral commitments, fiscal incentives (taxes)** and **research** in order:

(a) To limit (ban) the use of certain HFCs and PFCs used as substitutes for ozone-depleting substances (fluorinated gases (F-gases)); and to improve the manufacturing, handling, use and end-of-life recovery of F-gases;

(b) To reduce F-gas emissions from semiconductor manufacture, aluminium production, electric power transmission and distribution, magnesium production and miscellaneous sources;

(c) To reduce CO_2 emissions through improved operations in cement, lime and ammonia production;

(d) To reduce N_2O emissions through improved operations in adipic acid and nitric acid production.

181. The PaMs directed at industrial processes reported in the NC6s were generally the same as those reported in the NC5s. The most effective and most frequently reported measures are those directed at reducing emissions of F-gases and N_2O. Those aimed at reducing CO_2 emissions receive less attention.

182. The **ETSs** of Australia (repealed in July 2014) and the EU cover emissions from industrial processes. Since 2013, the EU ETS has covered CO_2 emissions from the production of petrochemicals, ammonia and aluminium, N_2O emissions from the production of nitric, adipic and glyoxylic acid and PFC emissions from aluminium production.

183. **Regulations** are used in Australia (Ozone Protection and Synthetic Greenhouse Gas Management Regulations, strengthened in 2010), the EU (directive on F-gases, with proposed strengthening in 2014; directive on mobile air-conditioning systems; and the industrial emissions directive, a recast of integrated pollution prevention and control measures aimed at best available techniques) and Switzerland (Ordinance on Chemical Risk Reduction) to limit the manufacture, or to improve the manufacturing, handling, use and end-of-life recovery, of fluorine-containing gases used as substitutes for ozone-depleting substances. In Iceland, the management of PFC emissions from aluminium production is subject to permitting regulations. Japan encourages the use of blended cement in public construction projects (Green Purchasing Law).

184. **Voluntary sectoral commitments** are used in a few instances to reduce emissions from industrial processes. An industry-led initiative seeks to reduce PFC emissions from aluminium production worldwide, and there are also national-level commitments in Netherlands (Low-PFC Aluminium Production), Norway (Climate Change Agreement with the aluminium industry) and Spain. In France, l'Association des Entreprises pour la Réduction des Emissions de gaz à effet de Serre (AERES) N_2O agreements and regulations, and other agreements related to emissions from industrial processes, are used to reduce industrial N_2O emissions. There are also voluntary agreements in Belgium (on nitric acid production and caprolactam production), Netherlands (on adipic acid production), Norway (on adipic acid production) and Spain (on SF_6 emissions from transmission and distribution of electricity).

185. **Fiscal incentives (taxes)** are used to reduce F-gas emissions in Denmark (imports of HFCs, PFCs and SF_6), Norway (imports and production of HFCs and PFCs) and Slovenia (HFCs, PFCs and SF_6).

186. **Research**, communication and cooperation and deals with sectors and stakeholders in support of the development and implementation of innovative emission reduction technologies are used in the Netherlands. Since 2009, the focus has been on the most significant sources: cooling (F-gases), industry (semiconductor industry and caprolactam production), sewage treatment facilities (CH_4 and N_2O), agriculture (CH_4 and N_2O), CHP engines (CH_4) and the monitoring of sources of non-CO_2 GHGs.

187. A **package of multiple policy types** (law/standard, taxation, budget/subsidy, technology development, awareness-raising, education and voluntary agreements) is used by Japan in its Holistic Policies to Reduce the Emissions of Fluorinated Gases.

4. Waste

188. Parties reported the continued use of their previous **framework targets, regulations, fiscal incentives, voluntary enterprise partnerships, and public facilities, infrastructure and resource management** to reduce CH_4 emissions via:

(a) Waste minimization through reduced packaging and increased product and packaging reusability and recyclability;

(b) Waste reuse through the implementation of waste separation and recycling;

(c) Minimization of landfilled waste through processing and incineration;

(d) Landfill management with capture or flaring of CH_4.

189. The EU uses **framework targets** and **regulations, which are then implemented by EU member States in various ways** to reduce CH_4 emissions. The main policy is the **EU landfill directive**, which mandates waste acceptance procedures and technical configurations of landfills and sets a 65 per cent reduction target by 2016 for the reduction of the amount of biodegradable municipal waste deposited in landfills. To meet the target,

EU member States are using: **fiscal incentives** (landfill taxes and price support for electricity from waste incineration); **regulations** (landfill quotas and tradable tipping certificates in the United Kingdom; waste acceptance standards; green certificates for electricity from waste incineration; and operating permits for landfills and compliance enforcement, including the closure of illegal sites); and **public infrastructure and resource management** (construction of collection facilities, incinerators and municipal waste treatment plants).

190. Other EU regulations include the EU waste incineration directive, which sets stringent operational conditions, technical requirements and emission limits for waste incineration in order to reduce, as far as possible, the negative effects on the environment caused by the incineration and co-incineration of waste; and the EU WEEE directive, which prescribes extended producer responsibilities and separate collection of waste from private households, to be taken for reuse or recycling. To meet the targets of the EU WEEE directive, EU member States are using **regulations** (producer responsibility for taking back products from collection facilities), **public infrastructure and resource management** (to establish public collection facilities) and **fiscal incentives** (visible fees to fund the collection and management of older waste).

191. **Landfill regulations** are also used in New Zealand. The New Zealand National Environmental Standard for Landfill requires landfills with a lifetime design capacity exceeding 1 Mt and a current stock capacity of 200,000 t to collect and destroy landfill gas.

192. Switzerland uses **regulations** (CO_2 ordinance) to require municipal solid waste incinerator (MSWI) plants to participate in the ETS or commit, along with all other MSWI plants, to meet CO_2 emission reduction goals.

193. **Voluntary enterprise partnerships** are used in Japan. In addition to more traditional recycling measures, the Government is encouraging manufacturers to improve the durability of and enhance the repair system for their products. The programme works with landfill owners and operators, state energy and environmental agencies, utilities and other energy suppliers, corporations, industry and other stakeholders to overcome the barriers to promoting cost-effective landfill gas energy projects. It focuses its efforts on smaller landfills not required to collect and combust their landfill gas, as well as on larger, regulated operations that are combusting their gas but not using it as a clean energy source.

194. A **package of multiple policy types** (taxation, budget/subsidy, law/standard, technology development, budget/subsidy, and awareness-raising) is used by Japan to promote recycling (waste minimization) and to upgrade combustion technologies at general waste and sewage sludge incineration facilities.

5. Agriculture

195. Parties reported relatively few PaMs aimed at reducing emissions from the agriculture sector. Parties reported the continued use of their previous **fiscal incentives (either directly or within the context of agricultural market reform) and regulations (e.g. the EU nitrates directive)**, as well as a new (first reported in the NC6s) **carbon offset programme**:

(a) To reduce N_2O emissions through manure management;

(b) To reduce N_2O emissions through optimized use of nitrogen fertilizer;

(c) To reduce CH_4 emissions through changes in livestock management.

196. In the EU, **fiscal incentives** (i.e. subsidies and production quotas under the **Common Agricultural Policy (CAP)**) are the principal instrument used to pursue the objectives listed in paragraph 195 above. For the most part, however, the primary purposes

of its policies are to achieve economic efficiency and to improve the environmental quality of water and soil. The new CAP (covering 2014–2020) will further enhance the existing policy framework for the sustainable management of natural resources, contributing to both climate change mitigation and enhancing the resilience of farming to the threats posed by climate change and variability.

197. In addition, the EU nitrates directive (regulation) seeks to prevent water pollution caused by N_2O originating from the excessive use of agricultural fertilizers and from agricultural waste. Secondly, the reduction of N_2O in soils also has climate change mitigation related benefits.

198. Other more climate-focused policies include **long-term R&D** in Australia and the use of **models and demonstrations** in New Zealand.

199. Australia's **CFI** is a voluntary emission offset scheme introduced in 2011. In Australia, the land sector is excluded from carbon price (ETS) obligations. Farmers are exempt from paying a carbon price for emissions from livestock, soils or fertilizer use. At the same time, farmers and land managers who use their skills, experience and knowledge of the land to lower carbon pollution have opportunities under the ETS to be rewarded for their efforts. Around AUD 1 billion of carbon revenue is being reinvested in the land sector to help its transition to a low-carbon future.

200. Belarus's **State Program on Mitigation Actions in 2013–2020** includes: measures, aimed at the agriculture, forestry/LULUCF and cross-cutting sectors, relating to systematic observation, climate change mitigation and adaptation; scientific and information-based support of the implementation of such measures; and international cooperation on climate change.

6. Land use, land-use change and forestry

201. As with agriculture, Parties reported relatively few PaMs aimed at reducing emissions or enhancing removals from the LULUCF sector. The measures tend to be part of larger policy strategies aimed at rural development, agricultural reform, environmental stewardship and biodiversity, rather than being solely climate focused. However, some Parties expect sizeable contributions from LULUCF to their overall emission reductions (see table 2).

202. Parties reported the continued use of their previous **fiscal measures (subsidies) and regulations (environmental codes) for private land, and public infrastructure and resource management rules and procedures for public land**:

(a) To promote sustainable forest management, taking into account the need to enhance GHG removals through forest sinks and to maintain and enhance biodiversity;

(b) To prevent forest fires;

(c) To afforest, reforest and manage forests, grassland, wetlands and cropland;

(d) To increase green urban areas.

203. Numerous **regulations, fiscal incentives and information dissemination programmes** are used in Australia to reduce emissions from land-use change from clearing native vegetation in Queensland and New South Wales. Australia also gives grants for cost-effective abatement opportunities.

204. The EU Forestry Strategy provides for **fiscal incentives** (grants) and **public infrastructure and resource management** (public land management schemes). The EU CAP market and rural development policies provide fiscal incentives for actions that affect sinks in agricultural soils. Slovakia uses regulations for sustainable forest management and

the United Kingdom's **Grown in Britain** industry-led action plan aspires to encourage businesses to invest in woodland creation and sustainable forest management practices.

205. Australia's **CFI** (see para. 199 above) and Belarus's **State Program on Mitigation Actions in 2013–2020** (see para. 200 above) also target reducing emissions or enhancing removals from the LULUCF sector.

206. Switzerland's **Forest Policy 2020** formulates provisions for the optimal coordination of the ecological, economic and social demands on the forest. It defines a total of 11 policy objectives, which concern wood harvesting potential, climate change, protective forest, biodiversity, forest area, the economic efficiency of the forestry sector, forest soil (including drinking water and tree vitality), protection against harmful organisms, the forest–wildlife balance, the leisure-related and recreational use of forests, and education and research (including knowledge transfer). The Forest Policy 2020 formulates several strategic guidelines and various measures for each objective.

E. Promotion and implementation of decisions of the International Civil Aviation Organization and the International Maritime Organization

207. This chapter presents information reported by Annex I Parties, in their NC6s, on how they identify the steps that they have taken to promote and/or implement any decisions taken by ICAO and IMO to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels (international bunker fuels) in pursuit of Article 2, paragraph 2, of the Kyoto Protocol and in accordance with the reporting guidelines.

208. Out of the 42 Annex I Parties that are also Parties to the Kyoto Protocol, 30 Parties reported information on how they promote and implement the decisions of ICAO and IMO to limit emissions from fuel sold for international aviation and maritime transport. A total of 13 Parties did not report such information in their NC6s, with Turkey not having submitted its NC6 by the time this document was prepared. In its NC5, Turkey presented relevant information.

209. In their NC6s, Annex I Parties reported that, in 2012, emissions from fuel sold for use in international aviation and maritime transport increased by 76.1 per cent and by 10.5 per cent, respectively, compared with in 1990. Projections data indicate that the aggregated GHG emissions are projected to be more than double the 1990 level in 2020, increasing from 70 Mt CO_2 eq in 1990 to 140 Mt CO_2 eq in 2020, and are further projected to continue increasing up to 2030, reaching an increase of 134.1 per cent compared with the 1990 level (for more information, please see chapters IV and V above).[14]

210. In the context of reporting information on the promotion and implementation of decisions taken by ICAO and IMO, many Parties highlighted the urgent need to address emissions resulting from fuel sold for international aviation and maritime transport globally through ICAO and IMO.

211. Furthermore, those Parties reported on their membership of those organizations and their active participation within ICAO and IMO, as well as within relevant sub-bodies that are concerned with addressing emissions from fuel sold for international aviation and maritime transport, namely the Committee on Aviation Environmental Protection under ICAO and the Marine Environment Protection Committee (MEPC) under IMO.

[14] These values, however, cover a very limited number of Parties, using the data provided by the EU and Iceland, and therefore may not be representative for these sectors.

1. Information relevant to the promotion and implementation of decisions taken by the International Civil Aviation Organization

212. With regard to information relevant to the promotion and implementation of decisions taken by ICAO, many Annex I Parties reported in their NC6s on the significant progress made by ICAO on a portfolio of measures to address emissions resulting from fuel sold for international aviation, mainly through the adoption of resolution A38-18 on climate change at the ICAO thirty-eighth General Assembly in 2013, including:

(a) Setting a collective medium-term global aspirational goal of keeping the global net carbon emissions from international aviation at the same level from 2020;

(b) Exploring the feasibility of a long-term global aspirational goal for international aviation;

(c) Developing a global market-based measure (MBM) scheme for international aviation;

(d) Developing a global CO_2 standard for aircraft;

(e) Strengthening standards, methodologies and a mechanism to measure/estimate, monitor and verify global GHG emissions from international aviation;

(f) Further developing state action plans;

(g) Further promoting sustainable alternative fuels.

213. In their NC6s, many Parties highlighted the decision to develop a global MBM scheme to address emissions resulting from fuel sold for international aviation as a milestone for the sector to contribute to global climate change actions.

214. In their reporting, Parties expressed confidence in the timely development of the global MBM scheme in accordance with the agreed schedule, as well as in the implementation of the scheme starting from 2020.

215. Many EU member States reported that, by directive 2008/101/EC, CO_2 emissions from the aviation sector have been included in the EU ETS from 2012 onwards, resulting in expected limitations of these emissions below historical levels in 2004–2006. In principle, the EU ETS includes emissions from flights within the EU as well as between the EU and other countries.

216. Following the adoption of resolution A38-18 on climate change by the ICAO thirty-eighth General Assembly, particularly its decision to develop a global MBM scheme to address emissions resulting from fuel sold for international aviation, the European Commission proposed a temporary 'stop-the-clock' mechanism. The mechanism was designed to allow non-European flights not to be included in the declarations of GHG emissions for 2012 until further adjustments to the directive are made.

2. Information relevant to the promotion and implementation of decisions taken by the International Maritime Organization

217. With regard to information relevant to the promotion and implementation of decisions taken by IMO, Annex I Parties reported in their NC6s on the progress made by IMO in relation to measures to address emissions resulting from fuel sold for international maritime transport, in particular the adoption, at the sixty-second session of MEPC in 2011, of a set of mandatory technical and operational measures to improve the energy efficiency of, and reduce GHG emissions from, international shipping, which entered into force on 1 January 2013 under annex VI of MARPOL.

218. The measures apply to ships of 400 gross tonnage and above, and comprise:

(a) An Energy Efficiency Design Index (EEDI) for new ships, which sets a minimum energy efficiency level for the work undertaken (CO_2 emissions per tonne-mile) for different ship types and sizes and which will be strengthened over time (reduction factors are set until 2025, when a 30 per cent reduction is mandated over the average efficiency for ships built between 1999 and 2009);

(b) A Ship Energy Efficiency Management Plan (SEEMP) for all ships, which is an operational measure that establishes a mechanism to improve the energy efficiency of a ship against 'business as usual' in a cost-effective manner.

219. In addition to the package of technical (EEDI) and operational (SEEMP) energy efficiency measures (see para. 218 above), some Parties reported on the ongoing work of IMO to address emissions from fuel used for international maritime transport, such as the development of an MBM for international maritime transport and a new study that focuses on updating key figures in the current (second) IMO GHG study (2009) of global GHG emissions from international shipping.

220. Many EU member States reported that the European Commission set out a strategy to progressively integrate maritime emissions into EU policy for reducing overall GHG emissions. In that context, Parties reported that the European Commission issued, in June 2013, a proposal for a regulation introducing monitoring, reporting and verification obligations for maritime transport above 5,000 gross tons to and from EU ports from 2018.

F. Ways to minimize adverse effects of the implementation of policies and measures under Article 2 of the Kyoto Protocol

221. Reporting on the minimization of adverse effects is another element included in the reporting guidelines. According to decision 15/CMP.1, annex, paragraph 36, each Party included in Annex I shall provide information not reported elsewhere on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties and in particular those identified in Article 4, paragraphs 8 and 9, of the Convention, taking into account Article 3 of the Convention. As the reporting on the minimization of adverse effects under Article 7, paragraph 2, of the Kyoto Protocol is closely related to the reporting under Article 7, paragraph 1, of the Kyoto Protocol (Article 3, paragraph 14, of the Kyoto Protocol[15]), a few Parties (Finland, Slovakia and Switzerland) used elements of the guidelines for reporting on Article 3, paragraph 14, of the Kyoto Protocol (decision 15/CMP.1, annex, paragraph 24) for their reporting under Article 2, paragraph 3, of the Kyoto Protocol.

222. A total of 23 Parties provided information in their NC6s on how they are implementing the provisions of Article 2, paragraph 3, of the Kyoto Protocol. Another 11 Party included in Annex I that did not provide such information in their NC6s provided closely related information in their most recent national inventory submissions,[16] with reference to Article 3, paragraph 14, of the Kyoto Protocol.

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[15] A compilation of the information in accordance with Article 3, paragraph 14, is prepared annually and published at <http://unfccc.int/national_reports/annex_i_ghg_inventories/items/6559.php#3594?rec=j&priref=600005964#beg>.

[16] National inventory submissions can be found at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php>.

1. Minimizing adverse effects of climate change

223. Several Parties noted that the implementation of the Kyoto Protocol by Annex I Parties should contribute to preventing dangerous anthropogenic interference with the climate system, thereby reducing adverse effects of climate change in all countries, especially developing countries.

2. Minimizing effects on international trade

224. According to decision 15/CMP.1, annex, paragraph 24, actions that may minimize adverse impacts of response measures on international trade can include: the progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all GHG-emitting sectors, taking into account the need for energy price reforms to reflect market prices and externalities; and removing subsidies associated with the use of environmentally unsound and unsafe technologies.

225. Several Parties (Finland, Italy, New Zealand, Norway and Switzerland) reported having taken steps to minimize energy market imperfections and/or to reflect externalities in market prices. Some Parties (Belgium, Greece, Italy and Portugal) noted that response measures can increase their imports of commodities such as natural gas or biofuels from developing countries. Some Parties (EU, Finland, Greece and Switzerland) also mentioned that they provide notification of their proposed PaMs under international trade conventions. Switzerland reported that it grants preferential tariffs to products from developing countries.

3. Minimizing social, environmental and economic impacts on other Parties

226. In addition, according to decision 15/CMP.1, annex, paragraph 24, measures to minimize social, environmental and economic impacts on other Parties can include:

(a) Cooperating in the technological development of non-energy uses of fossil fuels, and supporting developing country Parties in this regard;

(b) Cooperating in the development, diffusion and transfer of advanced fossil fuel technologies that cause fewer GHG emissions, and/or technologies, relating to fossil fuels, that capture and store GHGs, and encouraging their wider use; and facilitating the participation of the LDCs and other non-Annex I Parties in this effort;

(c) Strengthening the capacity and resilience of developing countries identified in Article 4, paragraphs 8 and 9, of the Convention for improving efficiency in upstream and downstream activities relating to fossil fuels, taking into consideration the need to improve the environmental efficiency of those activities;

(d) Assisting developing country Parties that are highly dependent on the export and consumption of fossil fuels in diversifying their economies.

227. Several Parties reported that they provide support for capacity-building and climate change mitigation in developing countries. Some Parties (Finland, Japan and Norway) reported that they have cooperated in the development and diffusion of advanced fossil fuel technologies, notably CCS. Some Parties (Finland, Japan and Switzerland) reported that they assist developing countries specifically with economic diversification. For example, Finland has implemented a policy-level programme in the Lao People's Democratic Republic that aims to diversify the economy and energy mix towards renewable sources. Some Parties (Finland, Norway and Switzerland) also reported support for improving the efficiency of activities related to fossil fuels. For example, Norway's Oil for Development programme has a goal of "economically, environmentally and socially responsible management of petroleum resources which safeguards the needs of future generations".

228. Several Parties (Austria, EU, Finland, Greece, Sweden and Switzerland) indicated that, before decisions to implement PaMs are taken, they carry out impact assessments, which include, to the extent possible, assessing the risk of adverse effects on other countries. In some cases, PaMs have been adjusted to reduce such effects. The EU sustainability criteria for biofuels, which aim to reduce impacts on food prices and land management, especially in developing countries, were the most frequently cited example. Another example is the use of sustainability criteria for CDM projects (Austria and Belgium).

229. Several Parties reported that they provide support for adaptation activities in vulnerable developing countries. Some of those Parties reported that they have prioritized climate change in their overall development and/or foreign policy. For example, Finland reported that "climate change has been mainstreamed" in the country's development programming.

230. A number of Parties noted that the Kyoto Protocol was designed to minimize adverse effects, by covering multiple GHGs and all GHG-emitting sectors and through its flexible mechanisms, notably the CDM. Several Parties (Belgium, Bulgaria, Denmark, Estonia, Slovakia and Switzerland) stated that they expect no adverse effects from some or all of their PaMs. Other Parties (EU, Greece and Japan) noted the difficulty of evaluating whether PaMs have adverse effects. Japan noted that "the method of evaluation has not been established internationally".

VII. Domestic and regional legislative arrangements and enforcement and administrative procedures to meet commitments under the Kyoto Protocol, including supplementarity

231. In accordance with decision 15/CMP.1, annex, paragraphs 37 and 38, each Annex I Party shall report any relevant information on its domestic and regional legislative arrangements and administrative procedures, established pursuant to the implementation of the Kyoto Protocol, according to its national circumstances. Such information shall include: a description of any domestic and regional legislative arrangements and enforcement and administrative procedures put in place by the Party to meet its commitments under the Kyoto Protocol; a description of any provisions to make information on those legislative arrangements and enforcement and administrative procedures publicly accessible; and a description of any institutional arrangements and decision-making procedures in place to coordinate activities relating to participation in the Kyoto Protocol mechanisms.

232. Also, each Annex I Party shall provide a description of any national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources.

233. In accordance with decision 15/CMP.1, annex, paragraph 33, each Annex I Party shall provide in its national communication information on how its use of the Kyoto Protocol mechanisms is supplemental to domestic actions and how its domestic actions constitute a significant element of the effort made to meet its Kyoto Protocol target.

A. Overview of domestic and regional legislative arrangements and enforcement and administrative procedures

234. Since the NC5s, **all Parties have continued enhancing their comprehensive approaches to addressing climate change, strengthening the coordination and monitoring of their national efforts and advancing in the implementation of their national climate change strategies**.

235. When reporting on domestic and regional legislative arrangements and enforcement and administrative procedures to meet their commitments under the Kyoto Protocol, Parties **focused on cross-sectoral, legal, regulatory and institutional frameworks** for implementing mitigation PaMs under the Kyoto Protocol, the legal basis for enforcement and administrative procedures, including responsibilities for the implementation of enforcement procedures, institutions and systems to account for emissions and assigned amounts, and relevant arrangements for implementing the Kyoto Protocol mechanisms: emissions trading (including GISs), JI and the CDM. Also, all Parties provided detailed information on their national registry and national system for the preparation and management of their GHG inventory (see paras. 273–283 below).

236. In the case of most Parties, the overall responsibility for climate change policymaking lies with one ministry or a department within a ministry. That ministry is usually also responsible for the coordination of climate change policy across the government. For most Parties this is the Ministry of Environment. In the case of some other Parties, the overall responsibility for climate change policymaking is shared between a number of institutions, which form a decentralized governance framework at the federal and/or state level (e.g. Austria). In all Parties, other ministries, agencies and national institutions are also involved in the coordination or implementation of specific climate change policies.

237. While, in many Parties, the national administration is generally responsible for the policymaking process, **regions also increasingly actively participate** in the process through consultations and they have responsibilities in the area of policy implementation (e.g. Switzerland). In addition, for some Parties, the further disaggregation of responsibility to the municipal level is involved in the implementation and delivery of climate change PaMs (Austria) and, to that end, a few Parties have put **climate agreements with municipalities** in place (e.g. Luxembourg). Japan established the Regional Committees for Promoting Energy and Global Warming Countermeasures, which are used by ministries and agencies in a cooperative effort to back up initiatives to address global warming by local governments.

238. For the implementation of the Kyoto Protocol, some Parties have built on existing arrangements and not introduced specific additional administrative procedures, since the existing structure of government administration effectively addressed their commitments under the Kyoto Protocol (e.g. Sweden), whereas others strengthened the intergovernmental coordination (see box 4).

239. Regarding domestic and regional legislative enforcement and administrative procedures to meet commitments under the Kyoto Protocol, including procedures for addressing cases of non-compliance under domestic law, in most Parties one or several authorities are responsible for the implementation of the Kyoto Protocol and have related obligations. **The authorities that are responsible for enforcement have several means of imposing sanctions**: in the Netherlands, for example, by imposing pecuniary penalties, withdrawing licences and, when required, imposing criminal sanctions. Most Parties also have **procedures in place at the level of individual instruments and measures**; for example, the EU ETS provides for penalties in the case of non-conformity.

Box 4
Strengthened intergovernmental coordination

Australia, in 2011, established a Select Council on Climate Change to provide a forum for the Government to engage with states, territories and local governments on programme implementation issues in order to support an effective response to climate change policy issues.

Austria has established a forum to strengthen the coordination between the different levels of government.

Denmark and Liechtenstein started coordinating climate-related policies and measures (PaMs) using a sectoral approach, meaning that the respective administration offices prepare sectoral action plans, which contain specific environmental objectives and dates for achieving them, and the same offices are in charge of the implementation, execution and monitoring of the effects of those individual PaMs.

France, in 2012, initiated an annual environmental conference, a platform for various stakeholders, such as non-governmental organizations (NGOs), trade unions, employer organizations, local authorities and the state, to meet and discuss implemented and planned PaMs in the area of climate change.

Iceland, in 2011, appointed a committee composed of representatives of different ministries to oversee the implementation of its climate change action plan.

Portugal created the new Environment Agency to enhance the coordination of the country's climate change and other environmental agenda and collaboration with other governmental entities, businesses, NGOs and the public in general.

240. The implementation of the Kyoto Protocol is in most Parties **underpinned by a national strategy for sustainable development and/or climate change** and accompanying national legislation, which provides the **legal basis for most environmental regulations** that effect GHG emissions and establishes **the legal framework to enable the Party to meet its obligations under the Convention and its Kyoto Protocol**. That legislation often includes framework policies and strategies and provides the **framework for enforcing commitments** and regulates the enforcement of legal measures in the event of violations.

241. Most Parties have **further promoted legislative and regulatory frameworks** for the implementation of the Kyoto Protocol. They have **strengthened existing cross-cutting instruments**, such as ETSs or carbon taxes (EU and Switzerland), or established **new cross-cutting instruments, such as framework targets**, which establish legally binding or indicative goals for GHG emissions, technology shares, fuel shares and efficiency, followed up by **MRV** procedures to ensure compliance (see paras. 121–124 above). Framework targets are used most heavily by the EU, but other Parties use them as well, such as the Russian Federation for the use of RES in electricity generation (see paras. 115–119 above).

242. **All Parties ensure public access to information on climate change** and related legislation. Several Parties have legislation in place that grants public access to information regarding the enforcement of environmental rules and regulations, and in many Parties, laws and underlying legislative arrangements are published in one of the official government bulletins after their adoption. **Most Parties also maintain a climate change website**, which is the key source of information provided by the government and provides much of the policy and legislative background on climate change. Usually the website also acts as a portal to a number of other governmental and NGOs involved in climate change work. Also, all Parties have expanded information on the JI and CDM programmes and on Kyoto Protocol units used on their **national registry websites**.

243. Some Parties have established **online legal information systems** to make the total set of climate change related legislation publicly available in addition to relevant websites, or an online PaMs database, which, in the case of the Portuguese website,[17] produces a progress report on the implementation status of each individual measure twice a year and can trigger contingency plans in the case of major deviations from defined targets. In their NC6s, some Parties reported that they plan to **strengthen their monitoring and evaluation of climate policy and to further ensure that the public has access to information** on climate change (Denmark).

244. Several Parties subject their **legislative instruments to a formal public consultation** before they are enacted or even during development for major strategic documents (e.g. the Austrian Strategy for Adaptation to Climate Change). In France, at the subnational level, regional climate, air and energy schemes are developed by authority representatives in liaison with local stakeholders and are made available to the public for comment before a final policy decision is made.

B. National legislative arrangements and administrative procedures for the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

245. Activities under Article 3, paragraphs 3 (afforestation, reforestation and deforestation) and 4 (forest management, cropland management, grazing land management and revegetation), of the Kyoto Protocol **play a significant role in the implementation of the Kyoto Protocol** for a number of Parties. Activities under Article 3, paragraph 3, are mandatory and activities under Article 3, paragraph 4, could be elected by Parties (see table 4). Parties have strengthened their efforts to account for those activities. Eight Parties (Australia, Denmark, France, Hungary, Liechtenstein, Monaco, Russian Federation and Switzerland) have elected to account for LULUCF activities on an annual basis, which required an even earlier implementation of arrangements to that effect.

Table 4
Activities under Article 3, paragraph 4, of the Kyoto Protocol elected by Parties

Elected activity under Article 3, paragraph 4, of the Kyoto Protocol	*Parties that have elected the activity, or have elected not to account for any activity*
No activity elected	Australia, Austria, Belgium, Bulgaria, Estonia, Ireland, Liechtenstein, Luxembourg, Monaco, Netherlands, New Zealand and Slovakia
Forest management	Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Japan, Latvia, Lithuania, Norway, Poland, Portugal, Romania, Russian Federation, Slovenia, Spain, Sweden, Switzerland, Ukraine and United Kingdom
Cropland management	Denmark, Portugal and Spain
Grazing land management	Denmark and Portugal
Revegetation	Iceland, Japan and Romania

246. The most substantial contribution from LULUCF activities to meeting the Kyoto Protocol target is expected in New Zealand (23 per cent of the base year emission level), followed by Iceland (20 per cent), Portugal (12 per cent), Ireland, Latvia and Slovenia (6 per cent). For some Parties, like Australia, reduced emissions from deforestation in comparison with the base year level have sizeably contributed to the achievement of their

[17] <www.CumprirQuioto.pt>

Kyoto Protocol targets, as they offset to a large extent increases in emissions from other sectors, such as the energy sector (according to information presented in Australia's NC6, emissions from deforestation and reforestation are projected to decrease by 80 per cent in the first commitment period of the Kyoto Protocol compared with in 1990).

Box 5

Overview of some selected legislative arrangements regarding the conservation of biodiversity and the sustainable use of natural resources

In **Iceland**, the Act on Nature Conservation sets the main legal basis for the protection of areas, organisms, ecosystems and biodiversity, while the Welfare for the Future strategy is the framework for Iceland's policy on sustainable development. The new forestry strategy aims to build up forest resources, optimize forest utilization, value and innovation, ensure environmental quality and biodiversity and address climate change by enhancing the role of forests as carbon sinks and adapting forestry to climate change.

The Forest Act and the Flora and Fauna Act ensure the sustainable management of forests in the **Netherlands**. The former contains the obligation to report felling activities and to replant within three years of felling, while the latter ensures that the negative consequences of (management) activities for biodiversity are minimized.

In **New Zealand**, the Permanent Forest Sink Initiative, the East Coast Forestry Project and the Sustainable Land Management Hill Country Erosion Programme contribute to the conservation of biodiversity and the sustainable use of natural resources.

In **Norway**, the main objective of the Forestry Act is the promotion of the sustainable management of forest resources with a view to promoting local and national economic development and to securing biological diversity and upholding the cultural values associated with the forest. The Forest Trust Fund was established to secure long-term investment in sustainable forestry.

The Regional Forestry Management Plans in **Portugal** serve as the basic planning instrument for forests that guide afforestation and, in general, forest management activities. They have to take into account the multifunctional role of forests and must be in line with the National Forest Strategy, as well as indicators for sustainable forest management, including biodiversity and carbon balance.

The **Russian Federation**'s Forest Policy is based on the principles of conservation of forests as an important natural habitat for biodiversity and climate-stabilizing systems and the rational sustainable continuous use of forest resources. The recently adopted new Forest Policy is aimed at conserving and expanding forest resources, promoting the development of the forestry sector and ensuring sustainable access to forest resources.

Switzerland has a long tradition of sustainable forest management, backed by the federal Forest Act, which ensures the conservation of forests and their sustainable management, prohibiting deforestation and clear-cutting. The Forest Policy 2020 includes a vision, objectives and measures for the sustainable management of forests.

247. Most Parties have **demonstrated progress in enhancing their estimation of emissions and removals from LULUCF activities**. Furthermore, they have established legal and institutional arrangements to enable them to obtain reliable information for making such estimates (e.g. by involving **several stakeholders**, such as state agencies, research institutes and universities, in the preparation of the estimates). Some Parties (e.g.

Austria and Italy) aligned the timing of the national forest inventory with the beginning and end of the first commitment period of the Kyoto Protocol.

248. As regards the conservation of biodiversity and the sustainable use of natural resources, the majority of Parties reported that their **forest is managed according to the principles of sustainable forest management**. Depending on the particular national circumstances and governance structure of the Party, **requirements for biodiversity conservation and the sustainable use of natural resources are regulated in acts, regulations, programmes and strategies** at the national or regional level (see box 5). Also, the national legislation of some Parties sets strict requirements in relation to deforestation.

C. Institutional arrangements and decision-making procedures to coordinate activities relating to participation in the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol

249. Participation in the Kyoto Protocol mechanisms (JI, the CDM and emissions trading) offers Parties a flexible and cost-efficient way to fulfil a part of their Kyoto Protocol commitments, while the host Party benefits from foreign investment and technology transfer. In particular, the project-based mechanisms, JI and the CDM provide flexibility to Parties in choosing the project types and sectors, ensure additional emission reductions and engage the private sector in mitigation efforts.

250. For some Parties, **participation in the Kyoto Protocol mechanisms is essential** for meeting their Kyoto Protocol targets. As indicated in table 2, those Parties expect to meet their Kyoto Protocol targets using a combination of the Kyoto Protocol mechanisms and LULUCF activities in addition to their domestic efforts. At the same time, several Parties mainly participate in the CDM and JI for capacity-building and technology transfer purposes.

251. All Parties have established the necessary institutional arrangements and procedures in accordance with the eligibility requirements for participation in the Kyoto Protocol mechanisms.[15] In addition, all Parties have appointed a designated national authority (DNA) for the CDM and a designated focal point for JI. National guidelines and procedures for approving JI and CDM projects have been adopted by most Parties. Several Parties have established legislative and institutional frameworks for emissions trading under Article 17 of the Kyoto Protocol.

252. Parties have put in place various **approaches, instruments and programmes to facilitate the implementation of the Kyoto Protocol mechanisms and to acquire Kyoto Protocol units, including**:

(a) Governmental procurement programmes (such as the Norwegian Carbon Credit Procurement Program (see box 6) and the JI/CDM programme in Austria);

(b) Participation through multilateral, regional, national and financial institutions (e.g. facilities and initiatives under the Nordic Environment Finance Corporation, the Latin American Carbon Finance Facility and the African Carbon Asset Development Facility, and facilities at the International Bank for Reconstruction and Development and the International Finance Corporation).

[15] Eligibility requirements, among others, include being a Party to the Kyoto Protocol, having an established assigned amount, having in place a national system for GHG estimation and a national registry, having submitted the supplementary information on GHG emissions and the assigned amount, and meeting methodological and reporting requirements under Article 5, paragraph 2, and Article 7, paragraph 1, of the Kyoto Protocol.

253. Most Parties that intended to use the Kyoto Protocol mechanisms for compliance purposes have created **dedicated funds or purchasing** programmes and set principles and priorities for the management of those funds. Examples include the Kyoto Funds of Finland and Luxembourg, and the Danish, Italian and Spanish Carbon Funds. Special programmes or funds have been created to fund domestic actions that contribute to emission reductions for the achievement of the Kyoto Protocol target, such as the Kyoto Rotation Fund in Italy and CFI in Australia. Purchasing funds of some Parties (e.g. Belgium) have set **eligibility criteria** for projects based on sustainability criteria or on the 'Gold Standard'.[19]

Box 6

The Norwegian Carbon Credit Procurement Program

In 2007, Norway launched its procurement programme for the first commitment period of the Kyoto Protocol (2008–2012) through direct purchases and funds. A total of 22 million credits were delivered for that period. All credits will be cancelled, not used for compliance.

In 2013, the programme for the second commitment period of the Kyoto Protocol (2013–2020) was launched, envisaging the procurement of up to 80 to 100 million certified emission reductions (CERs). Generally, all project types under the clean development mechanism (CDM) are eligible, except those involving hydrofluorocarbon emissions, nitrous oxide from adipic acid production and coal-fired power plants without carbon dioxide capture and storage. Procurement alternatives include CERs from vulnerable projects (already registered CDM projects to prevent the reversal of emission reduction activities) and new projects (through the Carbon Partnership Facility, Nordic Environment Finance Corporation funds and additional programmes under consideration), and a limited volume of credits from the Adaptation Fund.

254. Some Parties allow for the use of credits from the CDM and JI in their policy instruments, but have attached certain eligibility criteria. For example, the EU ETS legislation allows participants to use most categories of credits and credits are accepted from all types of project except nuclear energy projects, afforestation or reforestation activities and, from 2013, projects involving the destruction of F-gases.

255. In addition, governments and companies contribute to dedicated international carbon funds to purchase project-based GHG emission reductions from developing countries and ETT countries (see para. 312 below).

1. Participation in the clean development mechanism

256. The CDM is by far the most popular instrument among the Kyoto Protocol mechanisms and, hence, it delivers the most emission reductions. The majority of the projects are large-scale projects, with a focus on, among other things, the reduction of CO_2 emissions from the energy sector and the abatement of F-gases in the manufacturing sector, and the majority of the projects are implemented in Brazil, China, Central Asia and India.

257. However, owing to the change in eligibility criteria in several Annex I Parties, the trend of newly registered projects is going more and more towards small-scale projects in the LDCs. While, in 2012, only 34 per cent of all registered projects were small-scale projects, that number increased to 57 per cent in the first half of 2014. Also, while India, China and Brazil are still hosting most of registered projects, the number of registered programmes in East Africa increased from 1 per cent in 2012 to 8 per cent of the total

[19] The 'Gold Standard' is an internationally recognized criterion for projects that include environmental aspects, social sustainability and development, and economic and technological aspects.

registered projects in the first half of 2014. At the same time, owing to the recent commencement of the second commitment period of the Kyoto Protocol and the reduced number of Annex I Parties with a quantified emission limitation or reduction commitment for that period, the total number of registered projects decreased from 3,306 projects in 2012 (a peak year compared with 1,119 projects in 2011) to 157 registered projects in the first half of 2014.

2. Participation in joint implementation

258. All Parties involved with JI projects have established the **necessary procedures and institutional arrangements** (Belgium, Bulgaria, Czech Republic, Estonia, Finland, France, Germany, Hungary, Latvia, Lithuania, New Zealand, Poland, Romania, Russian Federation, Spain, Sweden and Ukraine). For example, Poland has developed legislation on the requirements for JI projects within and outside of Poland. Several Parties, recipients of JI projects, have developed special national procedures of approval for JI projects under JI Track 1 (which do not require the involvement of the Joint Implementation Supervisory Committee). The Russian Federation and Ukraine have established procedures for JI projects that enable the utilization of the current extensive GHG emission reduction potential.

259. While most of the JI projects have been implemented between EIT Parties and Annex II Parties, there are several examples of JI projects between Annex II Parties, such as projects between New Zealand and the Netherlands and other Annex I Parties, and domestic JI projects, such as in the Wallonia region of Belgium.

3. Participation in emissions trading

260. Emissions trading, as set out in Article 17 of the Kyoto Protocol, allows countries that have emission units to spare (emissions permitted to them but not 'used') to sell that excess capacity to countries whose emissions are over their emission reduction targets. Most Parties that intend to sell AAUs have established special **GISs**, which have been developed in a number of EIT Parties, namely Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Ukraine. They aim to ensure that the revenue received from international emissions trading is used for environmental protection and climate change related activities.

D. Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

261. Although several Parties (17) reported in their NC5s their **plan to use the Kyoto Protocol mechanisms for compliance with their Kyoto Protocol targets**, according to the information reported in the **NC6s** and the latest GHG inventory information, it seems that only eight Parties (Austria, Denmark, Japan, Liechtenstein, Luxembourg, Norway, Spain and Switzerland) actually need to use the **Kyoto Protocol mechanisms for compliance with their Kyoto Protocol targets**.

262. According to the information reported in the NC6s and preliminary data on emissions for the period 2008–2012[20] (see table 2), **many Parties** (Australia,[21] Belgium, Bulgaria, Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Monaco, Netherlands, Poland, Portugal, Romania, Russian

[20] Data refer to the GHG emission data reported in the national GHG inventories submitted in 2014. The data are preliminary because they have not yet been reviewed.

[21] For Australia, this includes reduced deforestation between the base year and the first commitment period of the Kyoto Protocol.

Federation, Slovakia, Sweden, Ukraine and United Kingdom) **seem to be on track to achieving their emission reduction targets** for the first commitment period of the Kyoto Protocol **by means of domestic actions** only. When preliminary data on **removals** from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are also **taken into account**, four additional Parties (Iceland,[22] Italy, New Zealand and Slovenia) are also expected to meet their respective targets **without the use of the Kyoto Protocol mechanisms**. The EU and its 15 member States (EU-15), according to the preliminary GHG inventory data for the first commitment period of the Kyoto Protocol, is also on track to achieve its target. However, as it cannot be taken for granted that any other member State included in the EU-15 will make surplus Kyoto Protocol units available to the EU-15 for its compliance, the EU-15 relies on each of the 15 member States to achieve its own target under the EU burden-sharing agreement.

263. The GHG emission data do not take into account the **effect of the allocation of allowances under ETSs**, such as the EU ETS, on the assigned amounts that are available to achieve the Kyoto Protocol targets (see paras. 271 and 272 below). This becomes relevant for some Parties if the **majority of their emission reductions occurred in sectors covered by the ETS** and thus companies participating in that ETS do not need to cancel all of the AAUs that they had been allocated. In such cases the **governments will need to use the Kyoto Protocol mechanisms** to achieve the targets, although the level of national GHG emissions during the commitment period would indicate otherwise (e.g. in the case of Belgium). In other Parties with a **tight cap on allowances for ETS participants**, the private sector will need to contribute by purchasing Kyoto Protocol units and, although the level of national GHG emissions during the commitment period is higher than the target, the **government will not need to use the Kyoto Protocol mechanisms** to achieve the national target (e.g. in the case of Norway).

264. The **Parties that planned to use the Kyoto Protocol mechanisms for compliance with their emission reduction targets** for the first commitment period of the Kyoto Protocol reported in their NC6s, **or provided an indication therein, how the use of the Kyoto Protocol mechanisms is supplemental** to their domestic actions to reduce GHG emissions. Table 5 provides an overview of the expected use of the Kyoto Protocol mechanisms at the government level, the allocated budget, and information on supplementarity for 13 Parties, of which 8 (Austria, Denmark, Japan, Liechtenstein, Luxembourg, Norway, Spain and Switzerland) are expected to use the Kyoto Protocol mechanisms at the government level to achieve their targets. The table does not include the expected use of the Kyoto Protocol mechanisms by the private sector, unless stated otherwise (see paras. 271 and 272 below).

265. Parties that expect to reach their Kyoto Protocol target by means of domestic actions only have not elaborated on supplementarity in their NC6s. In contrast, several **Parties that do not necessarily need to use the Kyoto Protocol mechanisms for compliance** have reported their intention to participate in **emissions trading** as net sellers (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia). In addition, **many Parties are actively participating in JI and the CDM** in order to build capacity and benefit from the transfer of technology, with Czech Republic, Estonia, Lithuania, Russian Federation and Ukraine being the main host countries for JI projects.

266. As summarized in table 5, many Parties defined supplementarity criteria, either in quantitative or qualitative terms; however, **the way that supplementarity is defined varies** from Party to Party, mostly because of the use of different baseline assumptions to estimate the total effect of domestic actions. Most of the EU member States that plan to use

[22] Emissions from aluminium production are excluded during the first commitment period of the Kyoto Protocol according to decision 14/CP.7.

the Kyoto Protocol mechanisms for compliance **defined supplementarity in quantitative terms** as the possible use of the Kyoto Protocol mechanisms worth up to 50 per cent of the overall effort made to attain their Kyoto Protocol targets.

267. Overall, the **assessment of supplementarity is a challenging task** in the absence of an agreed approach and reporting guidelines on how to set a quantitative threshold. Supplementarity criteria are discussed by Parties in their NC6s, which are based on their assessment of the effect of domestic actions and comparing that with the overall effort needed to attain their Kyoto Protocol target. The overall effort could be estimated by comparing the contribution of domestic actions, LULUCF activities and the Kyoto Protocol mechanisms on the one hand with the Kyoto Protocol target on the other hand. However, the **lack of reporting guidelines does not facilitate consistency** in the reporting on **supplementarity across Parties** and **hinders the comparability** of the reported information.

268. Notwithstanding such challenges, the information reported in the NC6s broadly suggests that **Parties that are using the Kyoto Protocol mechanisms to meet their Kyoto Protocol targets are striving to adhere to the supplementarity criteria** (see table 5). It should be noted, however, that this assessment is preliminary, as it is based on preliminary data and intentions to use the Kyoto Protocol mechanisms. A **comprehensive assessment of the adherence to the supplementarity criteria can only be possible at the end of the additional period for fulfilling the commitments under the Kyoto Protocol, when each Party will retire units for meeting its Kyoto Protocol target (the true-up period in 2015)**. That will be done after the actual estimated GHG emissions for the period 2008–2012 have been reviewed by the expert review teams and information on the actual use of the Kyoto Protocol mechanisms for compliance in the relevant retirement accounts has become available.

269. Compared with in their NC5s, in their NC6s Parties provided **more detailed and precise information on their plans to use the Kyoto Protocol mechanisms**. The information suggests that several Parties **intend to use the Kyoto Protocol mechanisms to a lesser extent than reported in the NC5s** (Denmark, Italy, Finland, France, Luxembourg, Netherlands, Norway and Portugal) and some intend to use them more (Austria, Belgium and Switzerland). Also, some Parties stated that their use of the Kyoto Protocol mechanisms declined due to the reduction in GHG emissions caused by the economic and financial downturn in recent years.

270. For some Parties, the reported values refer to the actual amount of units that is or will be acquired and not to the amount that is planned to be used to reach the target (e.g. Liechtenstein and Norway). Of the Parties that are expected to overachieve their targets with their expected use of the Kyoto Protocol mechanisms, only a few made a clear statement as to whether those units will be cancelled or carried over to the next commitment period. Norway stated in its NC6 that it has voluntarily chosen to over achieve its Kyoto Protocol commitment for 2008–2012 by 10 per cent, which is equivalent to 5 Mt/year. In addition, Norway will not use removal units (RMUs) issued under Article 3, paragraph 4, of the Kyoto Protocol to achieve its target; thus the total overachievement is expected to equal 6.6 Mt/year.

Table 5

Summary of information on the use of the Kyoto Protocol mechanisms by Annex B Parties to meet their targets under the Kyoto Protocol for the first commitment period, allocated financial resources, and how that use is supplemental to domestic actions

Party	*Expected use of the Kyoto Protocol mechanisms annually at the government level (at which acquired, received or contracted) (Mt CO_2 eq)*	*Allocated financial resources for the period 2008–2012*	*Information on supplementarity*
Austria	14.2 (15.0)	EUR 611 million total JI/CDM programme budget	The JI/CDM programme is only one of the many elements of the Austrian Kyoto Protocol strategy. The contribution of the JI/CDM programme is significantly lower than the estimated effect of domestic measures (more than 20 Mt CO_2 eq in 2010)
Belgium	5.9	EUR 233 million	In comparison, the aggregated emission reduction effect of PaMs is estimated at around 11.3 Mt CO_2 eq for 2009 and 19.8 Mt CO_2 eq for 2015
Denmark[a]	2.2	1.4 billion Danish kroner	The use of mechanisms is one of various instruments including sinks (1.8 Mt CO_2 eq/year) and domestic efforts (15.6 Mt CO_2 eq/year), and contributes less than 50 per cent of the difference between the projected "business as usual" emissions and the Kyoto Protocol target
European Union and its 15 member States	80.7	EUR 2 351 million	
Italy	2.0[b]	Not available	The maximum quantity of certified emission reductions or emission reduction units to be used by the Government to meet its Kyoto Protocol target is limited to 50 per cent of the emission reduction effort, which was estimated at 45.2 Mt CO_2 eq per year
Japan	74.5[c]	Not available	
Liechtenstein	0.05 (0.05)	Not available	Domestic actions are a crucial element of the efforts made by Liechtenstein to meet its quantified limitation and reduction commitment. To ensure that the use of mechanisms is supplemental to domestic action, the Parliament incorporated a respective regulation within the Emissions Trading Act in 2007
Luxembourg	3.0 (2.6)	EUR 173 million	All use of the Kyoto Protocol mechanisms is supplemental to domestic action
Netherlands	6.0 (9.0)	EUR 446 million	In comparison, the total effect of PaMs, estimated as the difference between the projected emissions under the "without measures" scenario and the Kyoto Protocol target (average annual emissions for the period 2008–2012), is 64.3 Mt CO_2 eq for 2010
Norway	4.2 (4.4)	1 447 million Norwegian kroner	Norway will meets its Kyoto Protocol target for the period 2008–2012 without any need for government purchase of Kyoto Protocol units, but voluntarily decided to overachieve

Party	*Expected use of the Kyoto Protocol mechanisms annually at the government level (of which acquired, secured or contracted) (Mt CO_2 eq)*	*Allocated financial resources for the period 2008–2012*	*Information on supplementarity*
		(EUR 175 million)	its target. The emission level in 2010 would have been around 10 Mt CO_2 eq higher than the actual emissions in the absence of domestic PaMs and the removal units to be issued under Article 3, paragraph 4, of the Kyoto Protocol (1.5 Mt CO_2 eq) will not be used for compliance
Portugal	1.6	EUR 96.9 million	Portugal expects to meet its Kyoto Protocol target by means of domestic actions (8.5 Mt CO_2 eq/year) and accounting of LULUCF activities (estimated at a minimum 6.0 Mt CO_2 eq/year). The Portuguese Carbon Fund has a sufficient volume of carbon credits to cover any future balance that may be necessary to make up, taking into account the uncertainty associated with the accounting of LULUCF activities
Spain	31.8	EUR 400 million	Spain compares its Kyoto Protocol target (15 per cent emission increase) with the estimated average increase in emissions without PaMs (73 per cent increase) in the period 2008–2012 compared with the base year level. Of that increase, 36 per cent is expected to be compensated by domestic efforts, 2 per cent by accounting of LULUCF activities and the remaining 20 per cent by the use of the Kyoto Protocol mechanisms
Switzerland	3.1	Not available	The effect of domestic measures in 2010 (3.9–5.3 Mt CO_2 eq) is estimated to be greater than the total use of the Kyoto Protocol mechanisms (3.1 Mt CO_2 eq/year) and thus Switzerland considers the use of the mechanisms to be supplemental to domestic action

Abbreviations: CDM = clean development mechanism, JI = joint implementation, LULUCF = land use, land-use change and forestry, PaMs = policies and measures.

[a] Information was partly provided during the in-depth review of the sixth national communication (NC6) of Denmark (as reported in document FCCC/IDR.6/DNK).

[b] During the in-depth review of the NC6 of Italy (as reported in document FCCC/IDR.6/ITA), Italy communicated that it would need an additional 3.4 Mt CO_2 eq annually from the use of the Kyoto Protocol mechanisms to fulfil its target for the first commitment period.

[c] Information was provided during the in-depth review of the NC6 of Japan (as reported in document FCCC/IDR.6/JPN).

[d] Of which 19.5 Mt CO_2 eq per year were acquired by the government through the Kyoto Mechanisms Credit Acquisition Program and 55 Mt CO_2 eq per year were acquired by the Federation of Electric Power Companies of Japan (according to the Environmental Action Plan by the Japanese Electric Utility Industry).

[e] According to the latest information provided during the in-depth review of the NC6 of Liechtenstein (as reported in document FCCC/IDR.6/LIE), only 0.02 Mt CO_2 eq are estimated to actually be needed for Liechtenstein to fulfil its target for the first commitment period.

[f] Information was partly provided during the in-depth review of the NC6 of Luxembourg (as reported in document FCCC/IDR.6/LUX).

271. Several Parties that **allow the use of the Kyoto Protocol mechanisms in their domestic ETSs** expect that the cancellation of units by participants will include credits from the Kyoto Protocol mechanisms. This means that although the government of the Party might not plan to use the Kyoto Protocol mechanisms for the fulfilment of its targets,

some units might enter the national registries through the private sector. The EU member States, Iceland, Liechtenstein and Norway **allow companies covered by the EU ETS** to meet their emission reduction targets by reducing emissions, by acquiring emission allowances from the market and by **using the Kyoto Protocol mechanisms**. A limit on the use by companies of Kyoto Protocol units is defined as a percentage of the cap set in the national allocation plan for the period 2008–2012 and varies from 10 per cent in Luxembourg, 15 per cent in Italy and 17 per cent in Denmark to 20 per cent in Spain. Similarly, New Zealand allows unlimited use of international units in its ETS, but plans to abolish that flexibility from 2015 onwards.

272. Thus, the **private sector could contribute to the meeting of a Party's Kyoto Protocol target by purchasing Kyoto Protocol units** (see paras. 263 and 264 above). However, the amount of Kyoto Protocol units actually used by companies is expected to vary depending on their actual emission levels in the period 2008–2012. In the case that the emissions of the companies decrease, for example as a result of efficiency measures or a decline in output due to the economic crisis, companies may choose not to purchase Kyoto Protocol units and thus the amount of units used by a Party to meet its Kyoto Protocol target may decrease accordingly. On the other hand, the EU reported that companies participating in the EU ETS surrendered a total of 808 Mt CO_2 eq (528 from the CDM and 281 from JI) for the period 2008–2012, although the total emissions from the EU ETS are lower than the designated target.

VIII. National systems and registries under the Kyoto Protocol

A. National systems

273. The national system under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1) (hereinafter referred to as the national system) is an important element of the overall institutional framework needed for the successful implementation of the Kyoto Protocol, since it enables the Party to prepare a comprehensive GHG inventory by means of a thorough assessment of the sources and sinks of GHG emissions. In accordance with the annex to decision 15/CMP.1, **all Annex I Parties**, in their NC 6s, **provided information** on how their national system is performing the general and specific functions defined in decision 19/CMP.1. Most Parties provided an explicit description of those functions in their NC 6s, while a few Parties provided a summary (Austria, Norway, Poland and United Kingdom), and all Parties referred to their initial report and the national inventory report of their 2013 annual submission for an elaborated description of the structure and functions of their national system.

274. Understanding that a robust national system provides the foundation for a high-quality GHG inventory, **most Parties had already made notable efforts to improve and strengthen their national systems by 2010**. However, since the submission of their NC 5s, many Parties have **further institutionalized their national system** by strengthening arrangements for the single national entity, enhancing the institutional and administrative arrangements for inventory preparation and management, and improving their quality assurance/quality control (QA/QC) procedures, methodologies, activity data (AD), emission factors (EFs) and uncertainty analysis.

275. Examples of the enhanced institutionalization of the national systems include:

(a) **Further strengthening of the institutional arrangements** through the formalization of the data provision processes (e.g. Bulgaria);

(b) **Further strengthening of the legal arrangements** necessary to perform the functions of the national system through the adoption of legislation prescribing obligations and procedures for the monitoring of GHG emissions (e.g. Croatia);

(c) **Expansion of the formal external review arrangements** by adding new consultation groups, such as the National Inventory Users Group in Australia, which includes key domestic users of the national inventory data, such as members of Australia's premier science organizations, academics, experts from the consulting sector and industry representatives;

(d) **Further strengthening the capacity of the national system for the timely performance of its functions**, including data collection for estimating anthropogenic GHG emissions by sources and removals by sinks, by increasing financial and human resources (e.g. Luxembourg);

(e) Enhancing inventory planning and management by appointing a **QA/QC manager** and coordinator (e.g. New Zealand) and **optimizing workflow organization, inventory documentation and data archiving** (e.g. Bulgaria).

276. Although **national circumstances**, such as the size of the country, dominant economic sectors and traditions in inter-institutional cooperation, have **predetermined the diversity in the arrangements for national systems**, as a rule, the **respective central governmental institution has overall responsibility** for the national inventory, and other governmental institutions, implementing agencies, organizations and consultants also contribute to the preparation of the inventory. To guarantee timely data delivery, many Parties **formalize arrangements through official agreements or legislation**. The EU issued a new legal basis on a mechanism for monitoring and reporting GHG emissions and for reporting other information at the national and EU levels relevant to climate change to support the Directorate-General for Climate Action of the European Commission, which is responsible for preparing the inventory on the basis of the inventories submitted by the EU member States. Consequently, some EU member States reported in their NC6s on their plans to introduce changes to their national systems in line with that new legislation.

277. **Parties continue to pay particular attention to enhancing their QA/QC procedures**. Several Parties have quality management systems that integrate their **inventory improvement plans** to guarantee the cost-effective allocation of resources to programmes specifically for inventory improvements (e.g. Austria and EU) and allow for the **external review** of inventory improvements (e.g. Australia).

278. The most important evidence of the **strengthening of national systems** in most Parties continues to be the demonstration of **major improvements to the quality of the GHG inventories** (improved time-series consistency; use of higher-tier estimation methods, country-specific EFs and more accurate AD; and reduction of uncertainty) in the NC6s compared with in the NC5s. By continuously **improving the completeness, transparency, accuracy, comparability and timeliness** of their **GHG inventories**, Parties provide a **solid basis for climate change policymaking**, the implementation of the Kyoto Protocol and **assessing compliance with the Kyoto Protocol**.

279. **The majority of Parties have made significant further efforts to ensure the functionality of their national system in the area of LULUCF activities**. By 2014, all Parties, including the 28 Parties that chose accounting at the end of the commitment period, need to account for LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. Thus, **all Parties have improved their ability to identify land areas** subject to afforestation, reforestation and deforestation, and if elected, areas of forest, cropland and grazing land management and revegetation, and to estimate and report corresponding emissions and removals.

280. **Capacity-building and cooperation** among Annex I Parties for GHG inventory preparation and management continued to play an important role in strengthening their national systems. Some Parties implemented separate projects dedicated to the improvement of the national system and the quality of the GHG inventory (e.g. Bulgaria), whereas other Parties reported on planned partnership projects that cover a wide range of activities (e.g. the Norwegian partnership project with Lithuania).

B. National registries

281. While, for the national systems, some institutional and administrative arrangements were already in place before the **Kyoto Protocol** came into force, the **national registries had to be newly established**. National registries are crucial for assessing Parties' **compliance with their Kyoto Protocol targets** as they record the holdings and transactions of Kyoto Protocol units and maintain information on those units in accounts with a predefined structure. **All Parties reported on the arrangements for their national registry in their NC 6s**, and the majority of Parties also referred, for further information on their national registries, to their initial reports and 2013 or previous annual submissions.

282. Since the publication of the NC5s, Parties have **further improved their registry operations and changes have been made to further institutionalize their national registries**. At the time of the submission of the NC5s, most Parties were connected to the international transaction log (Iceland connected in 2010) and, in their NC6s, all Parties reported that performance testing showed their compliance with the technical standards for data exchange between registry systems and their ability to reliably process transactions of Kyoto Protocol units.

283. **In their NC6s, several Parties reported on changes** to their national registries since their NC5s. The main change is the centralization of the operations of the EU ETS in a single EU registry operated by the European Commission called the CSEUR. The CSEUR is a consolidated platform that implements the national registries of the 28 EU member States plus Iceland, Liechtenstein and Norway in a consolidated manner and was developed together with the new EU registry. Following the successful implementation of the CSEUR platform, the national registries concerned were recertified in June 2012 and switched over to their new national registry in the same month. During the go-live process, all relevant transaction and holdings data were migrated to the CSEUR platform and the individual connections to and from the international transaction log were re-established for each Party.

IX. Information under Articles 10 and 11 of the Kyoto Protocol

284. Annex II Parties are required to report information on the steps they have taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity, in order to facilitate the implementation of Article 10 of the Kyoto Protocol.

A. Transfer of technology and capacity-building

1. Overview of transfer of technology

285. All Annex II Parties provided information on practicable steps they have taken to promote, facilitate and finance the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties.

286. Many continued to report on **engaging bilaterally with both developed and developing countries in the undertaking of technology transfer activities**. Such activities were observed to occur at different stages of the technology cycle, including during the research, development, demonstration, deployment, diffusion and transfer of technology stages. As also reported in the NC5s, projects and programmes in developing countries generally focus on the latter stages of the technology cycle, usually in the form of efforts to share knowledge and foster enabling environments in order to transfer technologies. Efforts with other developed countries tend to focus on the early stages of the technology cycle in the form of the collaborative research, development and demonstration of new climate technologies.

287. Technology transfer activities undertaken by Annex II Parties at the bilateral level with developing countries generally focus on the provision of technical assistance through development projects and programmes. Some Annex II Parties also presented examples of technology cooperation at the regional level, generally undertaken with the aim of addressing specific regional technology needs (for examples, see document FCCC/SBI/2014/INF.20/Add.1).

288. Many Annex II Parties reported supporting technology transfer activities through multilateral cooperation. The majority of those activities focused on fostering appropriate enabling environments for the deployment and diffusion of particular technologies. In a new development, it was observed that some of the activities were undertaken via the Technology Mechanism. In contrast to previously, it was also observed that many of the programmes had an online component related to information and knowledge-sharing (for examples, see document FCCC/SBI/2014/INF.20/Add.1).

289. The majority of Annex II Parties included concrete examples of technology cooperation activities. Many of these activities **targeted action on the mitigation of GHGs and involved technology transfer in the energy sector, particularly in relation to the deployment and diffusion of renewable energy and energy efficiency technologies** (see document FCCC/SBI/2014/INF.20/Add.1). It was also found that, since the NC5s, **more technology transfer projects and programmes have focused on supporting adaptation to climate change**.

290. Almost all Annex II Parties reported on the status of implementation of their technology transfer activities, noting that the majority had already been implemented, with others reported as ongoing or planned. Most of the activities were reported to be implemented by either the public sector or via a joint public–private initiative. The majority of the projects and programmes reported by Annex II Parties were implemented in the regions of Africa and Asia and the Pacific (see document FCCC/SBI/2014/INF.20/Add.1). However, in comparison with in the NC5s, a larger percentage of projects were reported to have been implemented in the region of Latin America and the Caribbean and on a global scale.

291. With regard to the funding of the **technology transfer activities, most Annex II Parties reported a combination of public and private funding**, although some referred to funding from solely public or private sources. Additionally, many Annex II Parties included information on initiatives and programmes undertaken to encourage, enhance and facilitate private-sector participation.

2. Technologies and factors contributing to successful technology transfer

292. In terms of the types of technology transferred, some Annex II Parties made explicit reference to 'hard' and 'soft' technologies. However, similar to in the NC5s, most implicitly referred to both types of technology. 'Soft' technologies formed an integral part of many of the technology projects and programmes reported by Annex II Parties and

included activities such as: supporting the creation of enabling environments for private-sector investments; training local officials; supporting education and training to enhance skills in the design, installation, operation and maintenance of technologies; and the strengthening of the capacities of national institutions relevant to technology development and transfer (for examples, see document FCCC/SBI/2014/INF.20/Add.1).

293. Many Annex II Parties reported success stories relating to technology transfer projects and programmes, noting concrete benefits, including: achieving quantitative GHG emission reductions in the recipient country; increasing access to modern energy services; reducing the fuel imports of the recipient country; increasing the expertise of local employees; and developing standards and guidelines to improve health, the environment and safety in the recipient country.

294. In reporting their success stories, many Annex II Parties highlighted the factors that contributed to the successful implementation of their projects and programmes. These include the need to: align the projects and programmes with the national policies, plans and strategies of the recipient country; undertake an integrated approach to technology transfer, including capacity-building and awareness components; undertake a market analysis; utilize innovative financing; and develop a strong and capable network for the implementation of the project or programme.

3. Partnerships with relevant stakeholders

295. Another factor that many Annex II Parties continued to report as contributing to the successful implementation of technology transfer activities was partnerships with and between relevant stakeholders. Partnerships were reported as being an effective channel for the implementation of technology projects and programmes and were also seen to facilitate local ownership of the activity. It was observed that many of the technology transfer activities reported by Annex II Parties were managed by government agencies and implemented by specialized development agencies through partnerships with relevant stakeholders.

296. Some Annex II Parties also noted the value of constructing partnerships between two or more Annex II Parties for the implementation of technology transfer activities in developing country Parties. It was reported that such partnerships could lead to the successful implementation of projects and programmes by building on the comparative strengths of the different partners (for examples, see document FCCC/SBI/2014/INF.20/Add.1).

4. Capacity-building

297. Developed countries have extensively reported on **support provided bilaterally and multilaterally to strengthen institutional, systemic and individual capacities** to plan and undertake mitigation actions, promote the CDM and facilitate access to carbon finance.

298. The range of supported mitigation actions varies according to national and regional circumstances. Among the initiatives undertaken to build the capacity for low-carbon development paths, the following were most often reported by Parties:

(a) Providing guidance on estimating GHG emissions and removals from LULUCF and developing MRV procedures, thus enabling developing countries to take informed decisions on reducing emissions from deforestation and forest degradation activities; and providing assistance to promote sustainable forest management;

(b) Assisting countries in establishing a national GHG inventory system and MRV procedures;

(c) Strengthening national and local institutional and technical capacity to formulate low-emission development strategies and nationally appropriate mitigation actions and to implement policies for renewable energy and energy efficiency;

(d) Organizing training on improved, sustainable methods to reduce GHG emissions from agriculture and land-use change and to promote the development of low-carbon cities;

(e) Building the capacity to deploy CCS technologies.

299. As regards the CDM, Parties consider it an opportunity for developing countries to contribute to emission reductions. Examples of support provided refer to institutional, systemic and individual capacity-building initiatives.

300. **The transfer of know-how for environmentally friendly technologies in the context of the CDM in countries in Africa, in the LDCs and in SIDS has become a priority for some Annex II Parties.** Institutional strengthening through the creation and training of DNAs, enhancing knowledge on CDM project formulation and promoting a clear understanding of the CDM rules and procedures among key public officers, developers and business experts are the main areas of focus of capacity-building support. One Party reported a close collaboration with a partner country to support the creation of a national centre for the study of climate change and the development of training curricula for future environmental managers who could ensure the long-term implementation of projects.

301. Improving developing countries' access to the international carbon market is another area in which Annex II Parties are actively engaged, including in terms of the provision of financial resources. Thanks to the cooperation between Annex II Parties and the World Bank, initiatives such as the Partnership for Market Readiness and the Carbon Initiative for Development (Ci-Dev) will enable access to new market instruments and promote CDM reforms that will lower the administrative costs of implementing projects.

302. The Annex II Parties that reported on their provision of capacity-building support to developing countries on CDM-related issues are Belgium, Denmark, Finland, Italy, Norway, Netherlands, Sweden and United Kingdom. Also, the Czech Republic, an Annex I Party, reported on its provision of support to CDM projects in developing countries implemented in partnership with private-sector stakeholders.

B. Provision of financial resources

303. Developed country Parties and other developed Annex II Parties, under Article 11 of the Kyoto Protocol, are required to report, in accordance with the provisions of Article 4, paragraph 3, and Article 11 of the Convention, information on the "new and additional" financial resources provided by them through bilateral, regional and other multilateral channels to meet the agreed full costs incurred by developing country Parties in advancing the implementation of their existing commitments under Article 4, paragraph 1(a), of the Convention that are covered in Article 10(a) of the Kyoto Protocol.

304. With regard specifically to funding for the Adaptation Fund, CMP 8 decided that, for the second commitment period, the Adaptation Fund shall be further augmented by means of a 2 per cent share of proceeds levied on the first international transfers of AAUs and the issuance of emission reduction units (ERUs) for projects under Article 6 of the Convention immediately upon the conversion to ERUs of AAUs or RMUs previously held by Parties.[77]

[77] Decision 1/CMP.8, paragraph 21.

305. Most Parties did not provide separate information on the provision of financial resources in accordance with Article 11 of the Kyoto Protocol and therefore did not clearly distinguish between support provided on a bilateral and multilateral basis under the Convention and under its Kyoto Protocol. More detailed quantitative and qualitative information on bilateral and multilateral funding, as well as on private finance provided, is available in document FCCC/SBI/2014/INF.20/Add.1. The quantitative information provided in the NC6s will also be made available in the respective section of the UNFCCC climate finance data portal,[23] while the information contained in the BR1s is available on the Biennial Reports Data Interface.[24]

306. The information provided refers to adaptation and mitigation activities that were supported, including support directed towards clean energy, energy efficiency, forestry, land use, transport, adaptation related activities, capacity-building and REDD-plus, making use of multilateral and bilateral channels. Most Annex II Parties specifically included information on forest-related activities, including REDD-plus. Various Annex II Parties also provided information on the regional distribution of support and, in that context, on a prioritized allocation of their support, for example regarding adaptation or regional assistance, with many Parties reporting their prioritization of the most vulnerable developing countries, such as the LDCs, SIDS and countries in Africa. In addition, many Annex II Parties referred to activities undertaken within the fast-start finance period, as well as to their reports provided in that context, indicating that the collective fast-start finance commitment had been met.[25]

307. Additionally, many Annex II Parties provided descriptions of the programmes and projects supported by them, as well as other initiatives supported or actions taken in the area of climate change, including concrete examples or signature initiatives. In line with the respective reporting guidelines, the NC6s and BR1s also included information on, for example, how far funds provided were "new and additional" and how they address the mitigation and adaptation needs of developing countries, as well as information on the costs of adaptation and descriptions of the methodologies used to produce the information reported. Furthermore, many Annex II Parties provided private sector related information.

308. Owing to various reporting issues,[26] the robust aggregation of the data provided by Annex II Parties, which would build the basis for the identification of clear trends and patterns in the provision of financial resources as compared with the data provided in the previous compilation and synthesis report, is highly difficult.

309. However, the information provided in the NC6s and BR1s suggests that **Annex II Parties continue to make predominant use of multilateral and bilateral channels in the provision of financial resources**, with an increase in funding through bilateral channels. Notwithstanding the various reporting issues identified, a few trends are identifiable, such as, for example, the **increased funding directed towards adaptation, energy, forestry, including REDD-plus, capacity-building and cross-cutting activities**, as well as through funds other than the Convention funds. Annex II Parties provided information on their **continued provision of funding to the Global Environment Facility**, although the sum of the amounts reported by Annex II Parties in NC6s is lower than that reported in NC5s. However, the sum of Annex II Parties' reported **contributions to the Least Developed Countries Fund and the Special Climate Change Fund** in the NC6s is higher than the sum of reported amounts in NC5s. In addition, Parties have also started to report on **funds provided to the Green Climate Fund**.

[23] <http://unfccc.int/financeportal>.

[24] <http://www4.unfccc.int/sites/br-di/Pages/Home.aspx>.

[25] More information on fast-start finance, including all information provided by developed country Parties, is available at <http://unfccc.int/5646.php>.

[26] As identified in document FCCC/SBI/2014/INF.20/Add.1, chapter VII.B.2.

310. Some developed country Parties provided concrete information on their **voluntary contributions to the Adaptation Fund** since the NC5s, including the total amounts of their contributions within the reporting period, as well as specific examples of projects supported. Furthermore, information on financial support directed towards Adaptation Fund related activities, such as the organization of the regional workshops on the accreditation of national implementing entities, was also provided by some Annex II Parties.[28] One Party also reported on contributions made to the core budget of the UNFCCC, including to the Kyoto Protocol. Table 6 provides an overview of the funds reported on.

Table 6

Financial contributions made by Annex II Parties to the Adaptation Fund and the Kyoto Protocol

(Millions of United States dollars)

	2009	*2010*	*2011*	*2012*	*Other year range within the reporting period*	*Total*
Adaptation Fund	0.18	86.75	21.79	14.80	15.45	**138.97**
Kyoto Protocol	4.51	3.88	0.254	0.097	0.72	**9.47**

311. In addition, some developed country Parties provided information on their contributions to the Adaptation Fund, which is basically funded through the 2 per cent share of proceeds levied on the issuance of CERs under CDM projects. A few countries, such as Liechtenstein and Netherlands, provided concrete information on their JI- and CDM-related expenditure. For example, the Netherlands reported that, in total, it contracted 33.2 Mt carbon credits from CDM projects, 17.1 Mt from JI projects, 3 Mt carbon credits from Latvia (GIS) and 2.2 Mt from its participation in carbon funds. Similarly, Ireland reported that, during the period from 2008 to February 2009, 5.255 Mt CERs were purchased, but that, in the light of the recent provisional inventory data for 1990–2012 published by Ireland's Environmental Protection Agency, it is unlikely that the units purchased will be used for compliance with Ireland's obligations for the first commitment period of the Kyoto Protocol. Another example involves Norway, which reported that its carbon procurement programme contributes through direct transactions of some 1.2 Mt CO_2 eq for the first commitment period to the Adaptation Fund and will continue its engagement also in the second commitment period. Some Annex II Parties provided information on carbon markets, with, for example, one Party highlighting the continued importance of the CDM in the LDCs, while also indicating the importance of scaled-up market mechanisms.

312. Some Annex II Parties provided information on contributions to multilateral carbon funds, such as the World Bank's: Prototype Carbon Fund; BioCarbon Fund; Community Development Carbon Fund; Carbon Fund for Europe; Carbon Finance Assist Trust Fund; Multilateral Carbon Credit Fund; and Ci-Dev. Other funds mentioned by Parties in this context include the Asian Development Bank's Asia Pacific Carbon Fund and its Future Carbon Fund, as well as the Nordic Environment Finance Corporation's Carbon Fund and its Testing Ground Facility. One such example is Finland, which provided detailed information on its investments in multilateral carbon funds for the acquisition of ERUs for the first commitment period 2008–2012, as well as on its purchases from bilateral projects, and reported that, in total, Finland received credits from about 110 projects at both the bilateral level and through funds, as well as that, in addition, Finland has committed more than EUR 3 million for purchasing emission reductions during the Kyoto Protocol's second commitment period from selected bilateral projects. Another such example is Ireland, which reported that its investments in such multilateral carbon funds have generated carbon

[28] More information on the workshops is available at <http://unfccc.int/3659.php>.

credits representing 2.42 Mt emission reductions. The United Kingdom also provided information on its investments made in CI-Dev.

313. In addition, some developed country Parties provided other project examples, including, inter alia, Australia, which reported on a pathway that Australia and the European Commission agreed on towards linking the Australian and European ETSs, as well as on the maintenance of strong technical exchanges on carbon markets with other jurisdictions operating or planning ETSs, including Japan, South Korea and the State of California in the United States of America, as well as the Australia–China collaboration on the design of ETSs, in the context of which, for example, three workshops on ETS design were funded. Belgium, on the other hand, reported on an initiative launched to promote the development of CDM programmes of activities in five African countries, but mentioned that, as the CDM may no longer be able to deliver the necessary funding, especially for projects for which carbon financing is the sole or the most important revenue source, it was decided to expand the scope of work towards the development of a framework for nationally appropriate mitigation actions. Similarly, the United Kingdom stated that, although the CDM will continue to play a key role in the LDCs, scaled-up market-based mechanisms should enable greater global emission reductions and improve the quality of carbon credits that are traded internationally, to ensure that market-based mechanisms drive genuine emission reductions. Ireland provided information on a scheme for offsetting all carbon emissions resulting from the official travel of its Government.

C. Other commitments under Article 10 of the Kyoto Protocol

1. Research and systematic observation

314. Almost all Annex I Parties cooperate and participate actively in scientific and technical research, as described in document FCCC/SBI/2014/INF.20/Add.2, chapter III. The focus of such climate change research covers a wide range of scientific disciplines, including, for example, the climate system and climate change impacts, in many instances, in support of climate strategies and policies, including for adaptation and mitigation. Improved scientific information to increase resilience to climate variability and change, and the social, economic and behavioural aspects, are among the emerging areas for research highlighted by many Parties.

315. Similarly, almost all Parties have contributed to the systematic observation of the climate, including by contributing to the Global Climate Observing System. In some cases, Parties highlighted advances in the development and maintenance of observational networks and systems, and improvements in the availability and quality of climate data and information.

316. Since their NC5s, Parties have **continued to strengthen their engagement in international and regional climate change research and observation activities**, such as by participating in, and contributing and providing support to, regional and international research programmes and organizations active in climate change research and global observing systems and networks, as demonstrated by the numerous examples provided by Parties. Furthermore, many such international cooperative efforts, as well as other bilateral, multilateral or regional activities, provide support for building and strengthening capacity and facilitating the engagement of developing countries in such international research and observational activities.

2. Education, training and public awareness

317. When reporting on the implementation of Article 10(e) of the Kyoto Protocol, many Parties referred to their reporting on the implementation of Article 6 of the Convention.

Parties reported on **international cooperation with developed and developing countries, as well as with the private sector**, on the implementation of Article 6 of the Convention.

318. Many Parties have cooperated in the areas of education and research, including through the creation of international networks through the United Nations University Regional Centres of Expertise on Education for Sustainable Development, which are hosted by higher-education institutions and involve local and municipal authorities, local communities, NGOs and the private sector. Some Parties have collaborated with international business networks that work to reduce emissions from the business sector and raise awareness of climate issues by showing that ambitious climate strategies afford business advantages and greater profitability.